

## CHAPTER 2: NATURAL ENVIRONMENT – EXISTING CONDITIONS, ENVIRONMENTAL IMPACTS AND MITIGATING MEASURES

This DEIS provides information about the environmental impacts that could generally be expected under the seven growth management alternatives considered. State Environmental Policy Act (SEPA) rules allow the discussion of alternatives to be conducted at a level of detail appropriate to the scope of the proposal. Once the City and County adopt these updates and amendments, there will be site-specific projects that could have more direct impacts on the environment. These projects may be subject to further environmental review.

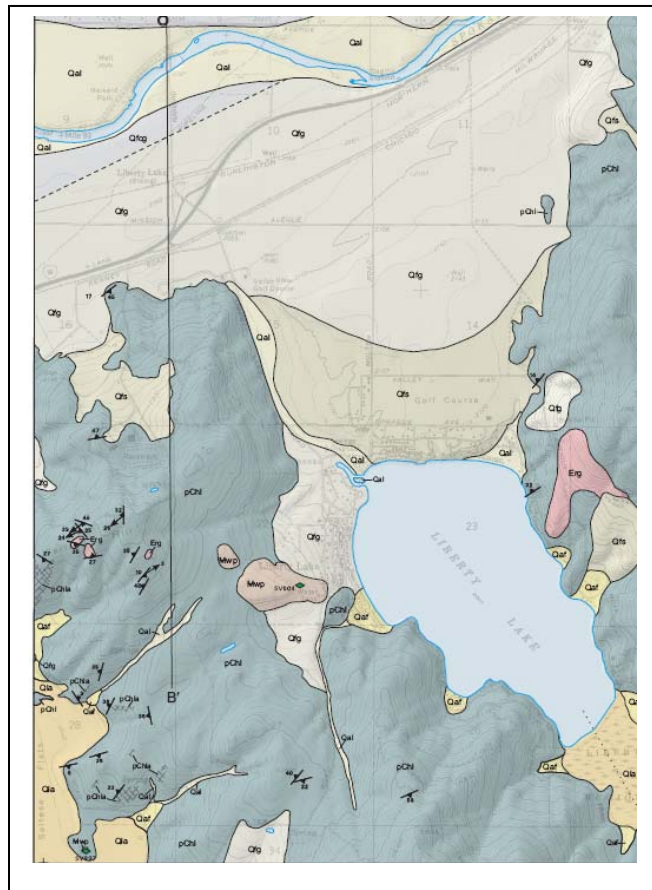
SEPA encourages discussion of the growth management alternatives to adequately inform decision makers of potential environmental impacts. SEPA suggests that the general environmental, as well as social, economic and other considerations, be taken into account when weighing the expected impact of each growth management alternative. However, this DEIS is programmatic rather than project-specific and, therefore, is not required to evaluate *all* possible impacts of development. The purpose of this DEIS is to analyze and discuss the potential environmental impacts of each alternative in order to provide a basis for officials to make decisions. Financing of capital improvements, economic competition, fiscal impact, or cost-benefit analysis are not required by SEPA (WAC 197-11-448 and 450).

## 2.1 EARTH

### 2.1.1. Earth – Existing Conditions

#### 2.1.1.1. Geology

Selection and enlargement of the Geologic Map of the Washington Portions of the Liberty Lake 7.5-minute Quadrangle and the South Half of the Newman Lake 7.5-minute Quadrangle, Spokane County (See entire map in appendices; See Description of Map Units on the following page).



## MAP 2.1

pChl	<p><b>Hauser Lake Gneiss (Precambrian)</b>—Interlayered granofels and semipelitic to pelitic schist and gneiss containing variable amounts of quartz, potassium feldspar, plagioclase, biotite, sillimanite, and garnet (also primary muscovite near the southern boundary of the Liberty Lake quadrangle); gray, tan, and brown; coarse grained (locally migmatitic); pelitic part of unit is thinly banded and is intensely crumpled on a small scale in many places; contains discontinuous dikes and irregular crosscutting bodies of feldspar, quartz, and pre-, syn-, and post-kinematic, leucocratic, two-mica pegmatite; contains concordant, structurally disrupted layers and boudins of garnet-hornblende amphibolite. Prominent mylonitic foliation and mineral lineation (N70°E) defined by aligned sillimanite are present throughout nearly all of the Hauser Lake Gneiss. Weissenborn and Weiss (1976) suggested that the protolith for the Hauser Lake Gneiss was the Prichard or Burke Formation of the Precambrian Belt Supergroup. The amphibolites are interpreted as metamorphosed mafic sills (Doughty and others, 1998), which are common in the Prichard Formation. Locally divided into:</p>	Qal	<p><b>Alluvium (Holocene)</b>—Silt, sand, and gravel deposits in present-day stream channels, on flood plains, and on terraces; consists of reworked glacial flood deposits (units Qfg and Qfs) and loess; may include small alluvial fans and minor mass-wasting deposits that extend onto the flood plain from tributaries.</p>
pChl-Erg	<p>Mount Rathdrum quartz monzonite to granite bodies (unit Erg) in Hauser Lake Gneiss that are too small or poorly exposed to be mapped separately. They, however, make up a considerable portion of the rock in those areas.</p>	Qfg	<p><b>Glacial flood deposits, predominantly gravel (Pleistocene)</b>—Thick-bedded to massive mixture of boulders, cobbles, pebbles, granules, and sand; contains beds and lenses of sand and silt; gray, yellowish gray, or light brown; poorly to moderately sorted; both matrix and clast supported; locally composed of boulders and cobbles in a matrix of mostly pebbles and coarse sand; boulders and cobbles consist predominantly of local bedrock units and units found to the east and northeast in Idaho; found mainly outside of the principal flood channel, which approximates the present course of the Spokane River.</p>
pChla	<p>Areas where garnet-hornblende amphibolite bodies are particularly large and (or) concentrated; however, considerable Hauser Lake Gneiss occurs with the amphibolite.</p>	Mwp	<p><b>Priest Rapids Member of the Wanapum Basalt, Columbia River Basalt Group (middle Miocene)</b>—Dark gray to black, fine-grained, dense basalt consisting of plagioclase, pyroxene, and olivine in a mostly glass matrix. Basalt is of the Rosalia chemical type (Table 1), which has higher titanium and lower magnesium and chromium than other flows of Wanapum Basalt (Steve Reidel, Pacific Northwest National Laboratory, oral commun., 1998). This unit is between 14.5 and 15.3 m.y. old and has reversed magnetic polarity (Reidel and others, 1989).</p>
Qfeg	<p><b>Glacial flood-channel deposits, predominantly gravel (Pleistocene)</b>—Thick-bedded to massive mixture of boulders, cobbles, pebbles, granules, and sand; may contain beds and lenses of sand and silt; gray, yellowish gray, or light brown; poorly to moderately sorted; both matrix and clast supported; locally composed of boulders and cobbles in a matrix of mostly pebbles and coarse sand; derived from granitic and metamorphic rocks similar to those exposed both locally and to the northeast and east in Idaho. This unit differs from unit Qfg in that it fills the deep, ancestral channel of the Spokane River, which now forms the Spokane Valley–Rathdrum Prairie aquifer. The flood deposits filling the channels are known to be several hundred feet thick. Boundaries between this unit and unit Qfg are based on location of these channels rather than clast-size differences.</p>		



WASHINGTON STATE DEPARTMENT OF  
**Natural Resources**  
 Doug Sutherland • Commissioner of Public Lands  
 Division of Geology and Earth Resources  
 Ron Teisene • State Geologist

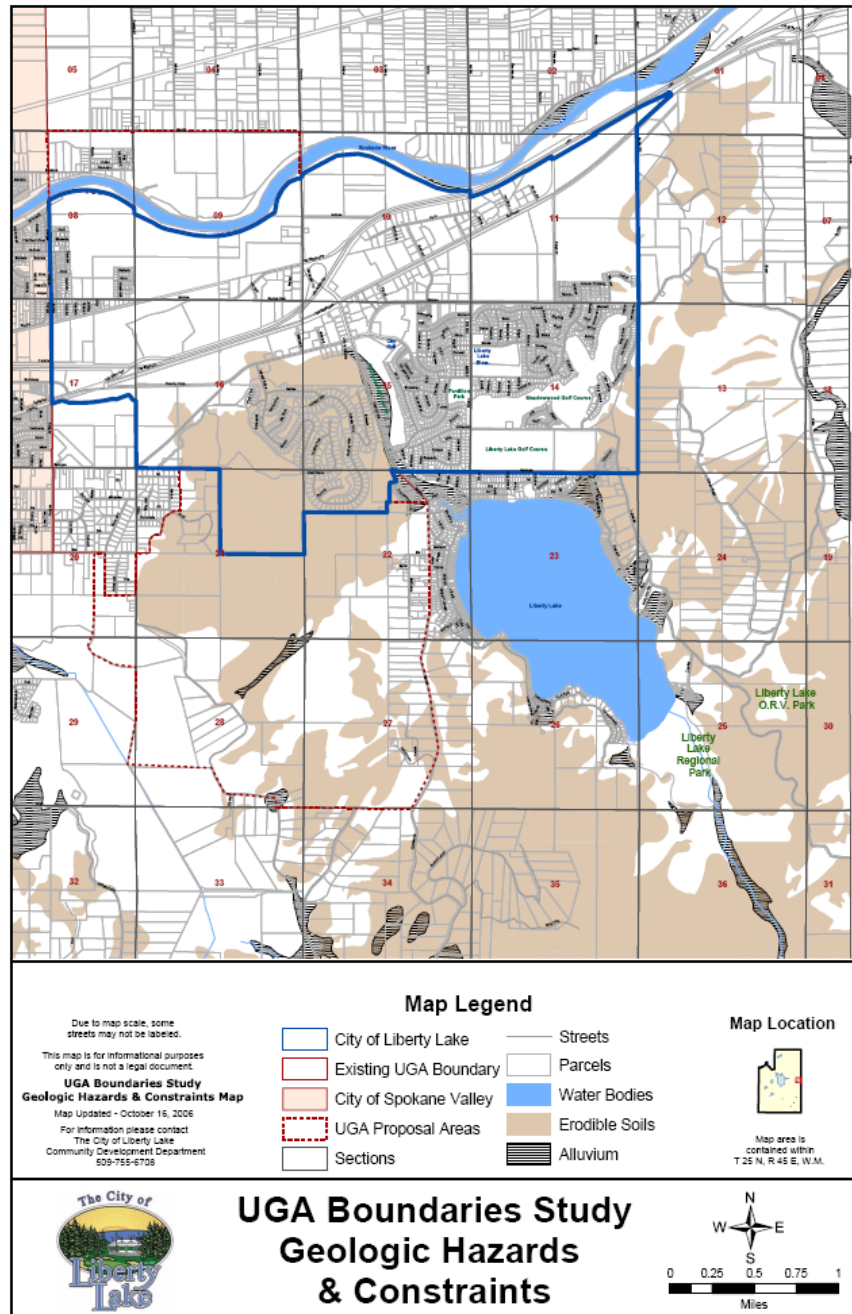
The northwest portion of Alternatives 2 and 3 lies north of the Spokane River and is situated on Qal – Alluvium (Holocene): Silt, sand, and gravel deposits in present day stream channels, on flood plains, and on terraces; consists of reworked glacial flood deposits (units Qfg and Qfs) and loess; may include small alluvial fans and minor mass wasting deposits that extend onto the flood plain from tributaries. The northwest portion of Alternatives 2 and 3 is also situated on Qfeg – Glacial flood-channel deposits, predominantly gravel (Pleistocene).

The southwest portion of Alternatives 2, 4, 5, 6, and 7 lie south of the City of Liberty Lake southern City limits. The majority of the area is situated over pChl – Hauser Lake Gneiss (Precambrian): Interlayered granofels and semipelitic to pelitic schist and gneiss containing variable amounts of quartz, potassium feldspar, plagioclase, biotite, sillimanite, and garnet (also primarily muscovite near the southern boundary of the Liberty Lake Quadrangle); grey, tan, and brown; coarse grained (locally migmatitic); pelitic part of unit is thinly banded and is intensely crumpled on a small scale in many places; contains discontinuous dykes and irregular cross-cutting bodies of feldspar, quartz, and pre-, syn-, and post-kinematic, leucocratic, two-mica pegmatite; contains concordant, structurally disrupted layers and boudins of garnet-hornblende amphibolite. Prominent mylonitic foliation and mineral lineation (N70°E) defined by aligned sillimanite are present throughout nearly all of the Hauser Lake Gneiss. Weissenborn and Weiss (1976) suggested that the protolith for the Hauser Lake Gneiss was the Prichard or Burke Formation of the Precambrian Belt Supergroup. The amphibolites are interpreted as metamorphosed mafic sills (Dought and others, 1998), which are common in the Prichard Formation. Locally divided into:

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pChla – Areas where garnet-hornblende amphibolite bodies are particularly large and (or) concentrated; however, considerable Hauser Lake Gneiss occurs with the amphibolite.

### 2.1.1.2 Soils

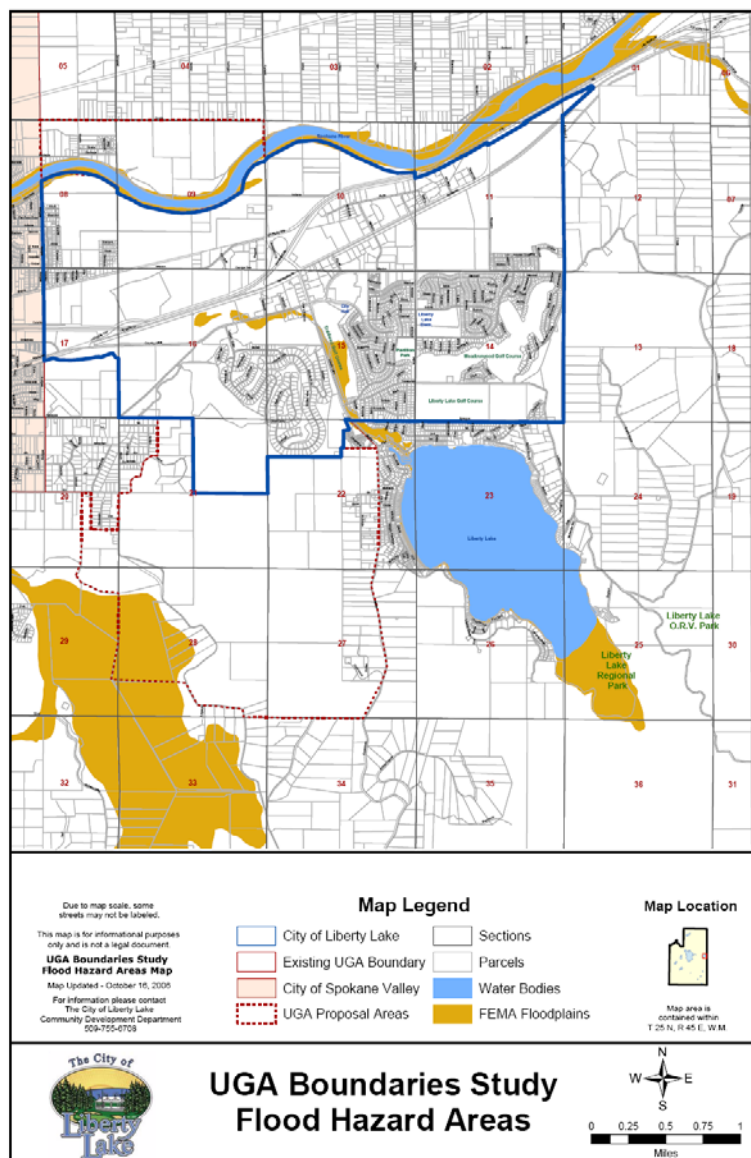


**MAP 2.2**

The *Soil Survey of Spokane County, Washington*, available online from the Natural Resource Conservation Service, identifies 4 different soil types in the NW study area (Alternatives 2 & 3).

This same soil survey identifies over 25 different soil types in the SW study area (Alternatives 2 through 7). For each soil type the survey identifies soil limitations for various types of construction and development and soil suitability for agriculture and forestry. Map 2.2, Geologic Hazards and Constraints, shows that Alternatives 2,4,5,6, and 7 contain large areas of erodible soils and a small area of alluvium.

Soil characteristics are a function of the underlying parent material, climate, slope, drainage, depth to groundwater, vegetation, degree of disturbance and historical land use. Specific site conditions should be verified on specific projects by on-site analysis and testing, due to the potential for irregular or small-scale inclusions of dissimilar soil types and the likelihood of previous disturbance such as grading, excavation and/or fill.



**MAP 2.3**



### **2.1.1.3. Topography**

The topography of the NW area is generally flat rural lands in agricultural use except steep slopes on the shoreline of the Spokane River. None of the shoreline is designated a geologically hazardous area, however, it is a FEMA designated floodplain.

The topography of the SW area includes vegetated hills; sparsely vegetated hills; rural lands in agricultural use, steep slopes, and Alternatives 2 & 6 contain areas of FEMA floodplains.

The Spokane County Critical Areas Ordinance (CAO) identifies landslide areas on slopes of 30% or greater; soils identified by Natural Resource Conservation Service as having a severe potential for erosion; hydraulic factors such as existing on-site surface and groundwater or changes in hydraulic factors, caused by proposals that create a severe potential for erosion or landslide hazard; areas that historically have been prone to landsliding (areas adjacent to lakes, streams, springs) or any one of the following geologic formations: alluvium, landslide deposit, Latah formation; areas of uncompacted fill; and areas that are unstable as a result of rapid stream or stream bank erosion. The CAO also states: "The existing map sources provide a general level of information and are not intended to pinpoint erosion or landslide hazards on individual sites or properties. Specific information may be provided by the applicant that indicates characteristics are not present on the site or that the proposal is not located within nor will impact a geologically hazardous area. In addition, there may be areas not designated on Spokane County maps that exhibit the characteristics of geologically hazardous areas. It is the intent of this ordinance to require all areas which meet the classification characteristics of geologically hazardous areas to meet the requirements of this section" (11.20.070).

### **2.1.1.4. Unique Physical Features**

Unique physical features in the NW study area (Alternatives 2 & 3) include the Spokane River and its shorelines.

Unique physical features in the SW study area include hills; forested backdrops; views of Liberty Lake; and small unnamed creeks and wetlands.

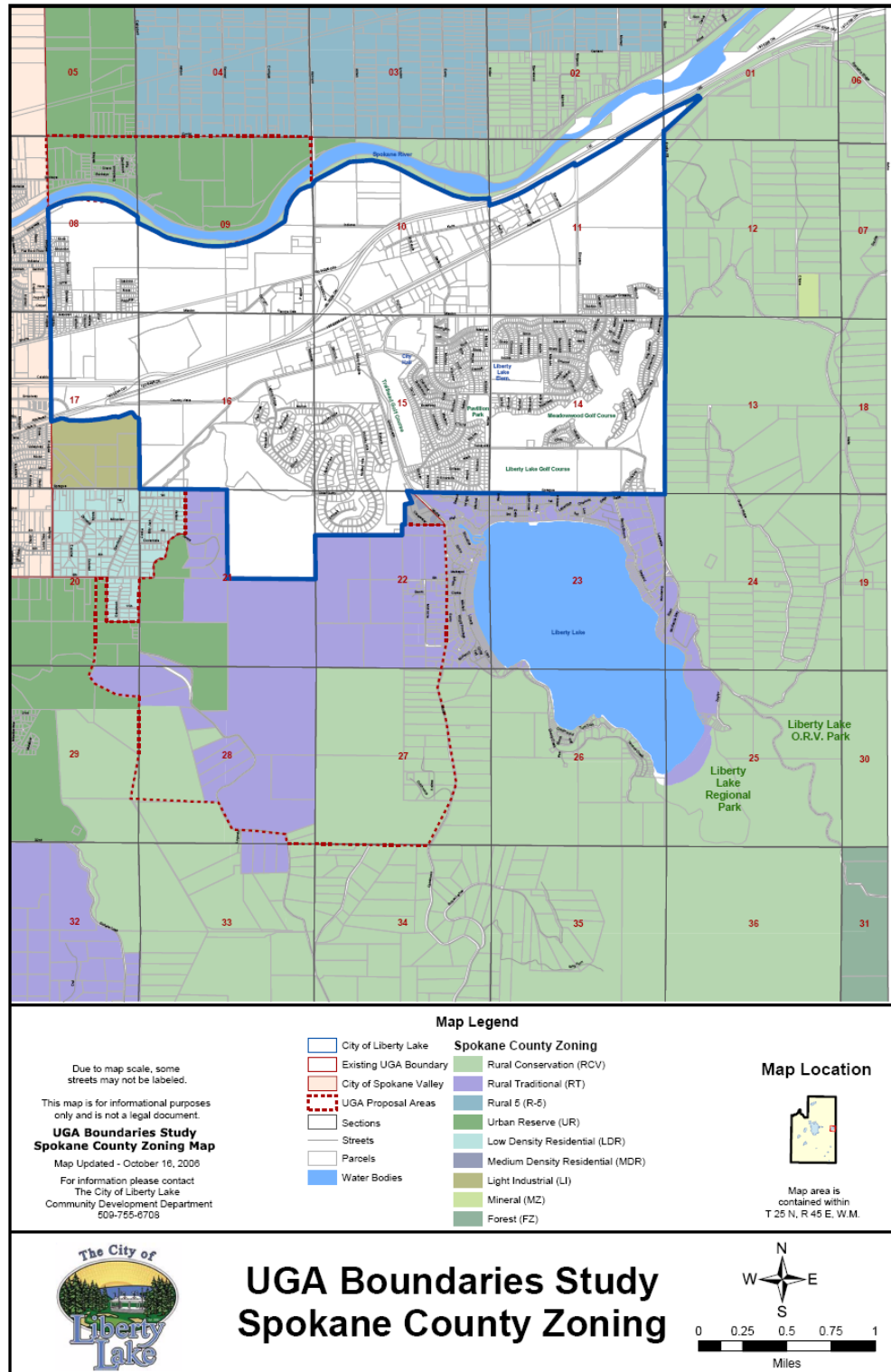
### **2.1.1.5. Erosion/Accretion**

Erosion is the removal and down gradient transfer of natural earth materials from a site due to the action of running water, freeze/thaw conditions, wind, chemical dissolution, or mechanical means. Map 2.2, Geologic Hazards and Constraints, shows that Alternatives 2,4,5,6, and 7 contain large areas of erodible soils and a small area of alluvium.

Accretion is the deposition and buildup of sediment due to river, stream, or wave action typically occurring near river mouths or along a beach or headland. The Spokane River, located in the NW study area (Alternatives 2 & 3), has the potential for accretion due to the volume of water and sediment load that it carries.

## 2.1.2. Earth – Impacts

New Construction, road improvements, and utility installation involving land clearing, fill, excavation, grading, and alteration of drainage characteristics may potentially affect the earth environment in a variety of ways.



**MAP 2.4**

The Spokane County Board of Commissioners recently passed a resolution regarding adoption of screening and evaluation criteria for the Spokane County Comprehensive Plan Update which states that land currently zoned Rural Conservation should be excluded from inclusion in the UGA.

#### Alternative 1 – No Action

The No Action alternative is expected to push growth and the impacts of growth not previously anticipated during the 2001 projections and analysis to the existing City limits. This alternative would focus development and impacts in the existing City and would be expected to result in the least amount of land impacted by development.

#### Alternative 2 (All Alternatives Included) – Adjusted UGA Boundary

This would expand the development pattern outside the existing UGA and would be expected to create the most significant and widespread impacts to the earth.

Under this alternative new growth would be directed into the existing City, and would require an expansion of the UGA. This alternative would be expected to result in areas of land that is presently designated as Urban Reserve, Rural Traditional, and Rural Conservation being developed for urban land uses.

Steep slopes and rock outcrops in some areas may affect the ability to attain maximum residential densities and increase costs of development.

The removal of vegetation may decrease habitat value, reduce wind buffering, alter light and glare, increase surface temperature fluctuations, diminish rainwater storage, change hydrologic characteristics, require burning or other disposal, reduce oxygen production, affect soil stability and structure and generally accelerate erosional processes.

Placement of earth fill may alter topography, compact subsurface soils, reduce infiltration of water, cause differential settling, alter subsurface and surface drainage patterns, destabilize hill slopes, result in methane gas production, create borrow pits, compress and damage vegetative root systems, create a safety hazard if left steeply sloped and unconsolidated, and accelerate erosion. Fill materials may also be subject to liquefaction during seismic events.

Excavation may alter topography, create unstable side slopes, destabilize hill slopes, alter subsurface and surface drainage, create ponding, contaminate groundwater, create borrow pits, damage root systems, require disposal sites, require blasting, cause liquefaction of soil and subsoil due to vigorous motion, disrupt the archaeological record, destroy the soil column and accelerate erosion.

Grading may result in a combination of impacts typical of earth fills and excavation depending on the degree of cut and/or fills, but will always disrupt the soil surface and therefore likely result in increased erosion potential.

Altered drainage from land disturbance activity, unless intentionally corrective, may result in a destabilized drainage network. Accelerated runoff or diversion of drainage from one system to another, may result in the temporary or prolonged overburdening of channel carrying capacity, causing scouring of stream banks, possible flooding and downstream sediment deposition. Altered drainage may also wash away topsoil, preventing the reestablishment of vegetation, thus continuing the erosional cycle.

Impacts may be from single projects, or result from cumulative actions.

#### Alternative 3 – NW Proposal

Under this alternative, new growth would be directed into the existing City, but would require a minor expansion of the UGA. This alternative would be expected to result in a moderate area of land that is presently designated as urban reserve being developed for urban land uses.

#### Alternative 4 – Entire SW Proposal

This would expand development outside of the existing UGA and would be expected to create significant and widespread impacts to the earth.

Under this alternative new growth would be directed into the existing City, and would require an expansion of the UGA. This alternative would be expected to result in areas of land that is presently designated as Urban Reserve, Rural Traditional, and Rural Conservation being developed for urban land uses.

Steep slopes and rock outcrops in some areas may affect the ability to attain maximum residential densities and increase costs of development.

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Impacts may be from single projects, or result from cumulative actions.



#### Alternative 5 – SW excluding areas east of Garry Rd. and west of Henry Rd.

This would expand development outside of the UGA and would be expected to create widespread impacts to the earth while removing the portion with FEMA Floodplain and wetland designation. According to a June 2006 letter from Brenda Sims, Stormwater Utility Manager for Spokane County, to Jim Manson, Spokane County Building and Planning Director, the area east of Henry Road would be particularly difficult to provide stormwater management due to soils, surface geology and steep slopes.

Under this alternative new growth would be directed into the existing City, and would require an expansion of the UGA. This alternative would be expected to result in areas of land that is presently designated as Urban Reserve, Rural Traditional, and Rural Conservation being developed for urban land uses.

Steep slopes and rock outcrops in some areas may affect the ability to attain maximum residential densities and increase costs of development.

The removal of vegetation may decrease habitat value, reduce wind buffering, alter light and glare, increase surface temperature fluctuations, diminish rainwater storage, change hydrologic characteristics, require burning or other disposal, reduce oxygen production, affect soil stability and structure and generally accelerate erosional processes.

Placement of earth fill may alter topography, compact subsurface soils, reduce infiltration of water, cause differential settling, alter subsurface and surface drainage patterns, destabilize hill slopes, result in methane gas production, create borrow pits, compress and damage vegetative root systems, create a safety hazard if left steeply sloped and unconsolidated, and accelerate erosion. Fill materials may also be subject to liquefaction during seismic events.

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Grading may result in a combination of impacts typical of earth fills and excavation depending on the degree of cut and/or fills, but will always disrupt the soil surface and therefore likely result in increased erosion potential.

Altered drainage from land disturbance activity, unless intentionally corrective, may result in a destabilized drainage network. Accelerated runoff or diversion of drainage from one system to another, may result in the temporary or prolonged overburdening of channel carrying capacity, causing scouring of stream banks, possible flooding and downstream sediment deposition. Altered drainage may also wash away topsoil, preventing the reestablishment of vegetation, thus continuing the erosional cycle.

Impacts may be from single projects, or result from cumulative actions.

#### Alternative 6 – SW excluding east of Garry Rd.

This would expand development outside the existing UGA and would be expected to create widespread impacts to the earth. Removing a portion east of Garry Rd. would alleviate some of the associated impacts on the Liberty Lake Watershed, but would

increase impact by adding land west of Henry Rd. designated FEMA Floodplain and wetlands. According to a June 2006 letter from Brenda Sims, Stormwater Utility Manager for Spokane County, to Jim Manson, Spokane County Building and Planning Director, the area east of Henry Road would be particularly difficult to provide stormwater management due to soils, surface geology and steep slopes.

Under this alternative new growth would be directed into the existing City, and would require an expansion of the UGA. This alternative would be expected to result in areas of land that is presently designated as Urban Reserve, Rural Traditional, and Rural Conservation being developed for urban land uses.

Steep slopes and rock outcrops in some areas may affect the ability to attain maximum residential densities and increase costs of development.

The removal of vegetation may decrease habitat value, reduce wind buffering, alter light and glare, increase surface temperature fluctuations, diminish rainwater storage, change hydrologic characteristics, require burning or other disposal, reduce oxygen production, affect soil stability and structure and generally accelerate erosional processes.

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Impacts may be from single projects, or result from cumulative actions.

#### Alternative 7 – SW area excluding west of Henry Rd.

This would expand development outside the existing UGA and would be expected to create widespread impacts to the earth by including the portion with FEMA Floodplain and wetland designation. According to a June 2006 letter from Brenda Sims, Stormwater Utility Manager for Spokane County, to Jim Manson, Spokane County Building and Planning Director, the area east of Henry Road would be particularly difficult to provide stormwater management due to soils, surface geology and steep slopes.

Under this alternative new growth would be directed into the existing City, and would require an expansion of the UGA. This alternative would be expected to result in areas of land that is presently designated as Urban Reserve, Rural Traditional, and Rural Conservation being developed for urban land uses.

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Impacts may be from single projects, or result from cumulative actions.

### **2.1.3. Earth – Mitigating Measures**

For all seven alternatives: No Action and Adjusted UGA, a variety of management actions will reduce negative impacts to the earth environment. These may be grouped into the following categories:

#### **2.1.3.1. Zoning Mechanisms**

Zoning mechanisms include land use designations (industrial, commercial, residential etc.) that are most appropriate for the physical setting, based on elements of environmental sensitivity and existing development patterns. Density and cluster provisions, specific area plan overlays, and planned unit developments provide site design flexibility. Lot coverage limitations, setback requirements, impervious surface

limitations and structural size limitations can limit environmental impacts. Density bonus incentives for projects with substantial community benefit, modification of variance criteria due to environmental elements and other strategies should be considered outside of the Liberty Lake Watershed.

#### **2.1.3.2. Environmental Ordinances**

Environmental ordinances are regulatory tools that address development standards in environmentally sensitive areas such as wetlands and streams, shoreline areas, geologic hazard areas (steep slopes etc.), critical wildlife habitat and areas of local habitat significance, frequently flooded areas, and critical aquifer recharge areas. They tend to emphasize avoidance, alternatives analysis, minimization and mitigation based on functional parameters.

The existing Spokane County Shorelines Program would be used to regulate development on the shorelines of the Spokane River. The City's Environmental Ordinance also addresses wetlands, fish and wildlife habitat conservation areas, geologically hazardous areas, and critical aquifer recharge areas. In unincorporated Spokane County the Critical Areas Ordinance addresses development within geologically hazardous areas, critical aquifer recharge areas, fish and wildlife habitat conservation areas, frequently flooded areas, streams and stream buffers, and wetlands that meet the minimum size thresholds and their associated buffers.

Geologic hazards, wildlife habitat and other natural features are also regulated through the SEPA process and specific prerequisites within the comprehensive plan.

#### **2.1.3.3. Development Regulations**

The City of Liberty Lake Development Code regulates all land clearing and grading activity requiring site planning, construction access, erosion controls, drainage plans, and site restoration or mitigation in the City. Chapter 14.824 of the County's zoning code and Appendix J of the International Building Code (IBC) regulate land clearing and grading activity.

#### **2.1.3.4. Best Management Practices (BMPs)**

BMPs are specific techniques of construction design, methodology and timing developed to minimize known impacts on the environment. Examples of BMPs are: avoiding or minimize land disturbance or construction on sensitive soils during the wet season, erosion and sedimentation control methods, minimize cleared areas and retain native vegetation.

#### **2.1.3.5. Innovative Site Development**

Specific Area Plan Overlays (SAP) are an innovative approach to development which accommodates community growth while reducing impacts to natural resources. The SAP process takes into consideration the site and tailors development proposals that address specific features of the site and designs to minimize the environmental impacts of development activities. SAP practices include, development scaled to minimize reliance on automobiles, landscapes designed to control stormwater and conservation measures. SAP also provides for density transfers or transferable development rights as a method of providing efficient land use while protecting critical areas and offering retention of open space.

#### **2.1.3.6. Site Characterization**

Environmental site characterization addresses informational requirements prior to permitting and site disturbance. The following are examples of environmental site characterization: slope stability analysis, drainage conveyance capacity investigation, wetland delineation, habitat survey, seismic analysis, soil suitability study, hydrogeologic assessment, site history, hazardous materials audit, alternatives analysis and so forth.

#### **2.1.3.7. Conservation Strategies**

"Conservation Futures" is a property tax on all lands within Spokane County, enabled by the Washington State Legislature in 1971. Spokane County adopted and began a local program in 1994. Spokane County's Conservation Futures Program is intended to protect, preserve, maintain, enhance, restore, limit the future use of or otherwise conserve selected open space land, rural lands in agricultural use, forests, wetlands, wildlife habitats, and other lands having significant recreational, social, scenic, or aesthetic values within the boundaries of Spokane County. Acquired properties will not be developed but kept in an enhanced natural area consistent with the Revised Code of Washington (RCW Chapter 84.34). As a jurisdiction within Spokane County, the City of Liberty Lake will participate in this program when possible. Conservation Futures funds are used towards acquisition of property and/or property easements that ensure public access and enjoyment of our greatest resources in perpetuity.

The City has the Open Space and Recreation Zoning District - O (Open Space and Recreation) – The O zone allows for open area spaces and recreational uses such as public/ private parks, preserves, and trails, as well as public and privately owned facilities. Local and regional recreation opportunities are included within this zone. The zone promotes the conservation of public and private sensitive or critical natural resource areas and areas of local interest as open space.

#### **2.1.3.8. Redevelopment of Existing Buildings and Infrastructure**

Redevelopment could involve a variety of actions which might include renovation of existing buildings and creation of incentives to increase occupancy, allowance of mixed uses within a single building, permitting accessory dwelling units within existing residential neighborhoods, density minimums to insure buildout efficiency, increasing height limits in built out areas where appropriate, requiring underground or rooftop parking where feasible, upgrading existing utility corridors to handle added density, eliminating bottlenecks in traffic circulation systems and improving the attractiveness and function of existing parks and public property to increase redevelopment potential.

All of these efforts would reduce the demand for new construction on previously undeveloped sites and improve efficiency within existing footprints. For example, a five story building has the same amount of impervious surface as a single story building on the same footprint.

## **2.2 AGRICULTURAL CROPS**

### **2.2.1. Agricultural Crops – Existing Conditions**

The City of Liberty Lake does not designate land for agricultural use.

Spokane County has designated the existing UGA Medium Density Residential, Low Density Residential, and Light Industrial.



The NW area is zoned Urban Reserve, while the SW areas are designated Urban Reserve, Rural Traditional, and Rural Conservation. See Map 2.4 for Spokane County Zoning.

The **Rural Traditional (RT)** zone includes large-lot residential uses and resource-based industries, including ranching, farming and wood lot operations. Industrial uses will be limited to industries directly related to and dependent on natural resources. Rural-oriented recreation uses also play a role in this category. Rural residential clustering is allowed to encourage open space and resource conservation.

The **Rural Conservation (RCV)** zone applies to environmentally sensitive areas, including critical areas and wildlife corridors. Criteria to designate boundaries for this classification were developed from Spokane County's Critical Areas ordinance and Comprehensive Plan studies and analysis. This classification encourages low-impact uses and utilizes rural clustering to protect sensitive areas and preserve open space.

The **Urban Reserve (UR)** zone includes lands outside the Urban Growth Area that are preserved for expansion of urban development in the long term. These areas are given development standards and incentives so that land uses established in the near future do not preclude their eventual conversion to urban densities. Residential clustering is encouraged to allow residential development rights while ensuring that these areas will be available for future development.

There are several agricultural/horticultural nurseries and small individual farms in the proposed NW and SW UGA alternatives, but there are no farms or rural lands which are designated for long term productive agricultural and resource use.

### **2.2.2. Agricultural Crops – Impacts**

The existing agricultural activity in the proposed UGA is a remnant of historical land use. A comparison of the agriculture component on the existing Land Use Map with current agricultural activity shows a significant loss of farming in the past 20 years. Agricultural land will continue to be converted to large lot subdivisions within the proposed UGA as long as undeveloped acreage remains available. Proximity to jobs in Spokane, Spokane Valley, and Liberty Lake makes the Rural zoned land attractive to homebuyers looking for acreage close to town. Whether or not there is adequate or even excessive capacity added to the UGA, and even if intensive infill occurs, agriculture will continue to decline in this area. The County's Rural Traditional, Urban Reserve, and Rural Conservation zoning designations protect rural lands, not agricultural use. Under all alternatives, it is likely that without additional rural lands in agricultural use protection measures; rural lands in agricultural use will continue to be lost to development.

Another impact of rural home development in this area is the loss of future opportunities for urban development. Large lot zoning where homes are often centered in the middle of the lot makes redevelopment at urban densities difficult. If the future use for some or all of the current Rural zoned land is urban development at some point in the future, serious consideration should be given to the types of development patterns permitted within the rural designated zones. Another impact of the conversion to large lot subdivisions is the proliferation of exempt wells in areas closed to surface water withdrawals. Because of the connection between groundwater based wells and surface water flows exempt wells pose a growing concern for fish and wildlife habitat dependent on minimum instream flows.

### **Alternative 1 – No Action**

This alternative would be likely to create the least amount of impact to rural lands in agricultural use, but without additional protection measures, the County would continue to experience loss of agricultural areas over time. Further, large-lot development would continue with onsite wells and septic systems which hinder further infill opportunities.

#### Alternative 2 – Adjusted UGA Boundary – All Alternatives Included

This alternative would be expected to create the most significant loss of rural lands in agricultural use as well as increased potential for future urban infill.

#### Alternative 3 – Adjusted UGA Boundary – NW area

Because this area is currently zoned Urban Reserve, this alternative would be expected to have less of an impact on rural lands in agricultural use than alternatives 2, 4, and 6. Adjusting the UGA boundary would be expected to create the loss of rural lands in agricultural use and impacts to agricultural crops as well as increased potential for future urban infill.

#### Alternative 4 – Adjusted UGA Boundary – Entire SW area

Because the majority of this area is zoned Rural Conservation and Rural Traditional, this alternative would be expected to have a much greater impact on rural lands in agricultural use than alternatives 1 and 3. Adjusting the UGA boundary would be expected to create a significant loss of rural lands in agricultural use and impacts to agricultural crops as well as increased potential for future urban infill.

#### Alternative 5 – Adjusted UGA Boundary – SW area excluding east of Garry Rd. and west of Henry Rd.

While the majority of this area is zoned Rural Conservation and Rural Traditional, this alternative would remove some Rural Conservation and Rural Traditional lands, it is still expected to have a greater impact on rural lands in agricultural use than alternatives 1 and 3. This alternative would remove a small portion of Urban Reserve zoning. Adjusting the UGA boundary would be expected to create a significant loss of rural lands in agricultural use and impacts to agricultural crops as well as increased potential for future urban infill.

#### Alternative 6 – Adjusted UGA Boundary – SW area excluding east of Garry Rd.

While the majority of this area is zoned Rural Conservation and Rural Traditional, this alternative would remove some Rural Conservation and Rural Traditional lands, it is still expected to have a greater impact on rural lands in agricultural use than alternatives 1 and 3. This alternative would add a small portion of Urban Reserve zoning. Adjusting the UGA boundary would be expected to create a significant loss of rural lands in agricultural use and impacts to agricultural crops as well as increased potential for future urban infill.

#### Alternative 7 – Adjusted UGA Boundary – SW area including east of Garry Rd. and west of Henry Rd.

While the majority of this area is zoned Rural Conservation and Rural Traditional, this alternative would remove some Rural Conservation and Rural Traditional lands, it is still

expected to have a greater impact on rural lands in agricultural use than alternatives 1 and 3. This alternative would remove a small portion of Urban Reserve zoning. Adjusting the UGA boundary would be expected to create a significant loss of rural lands in agricultural use and impacts to agricultural crops as well as increased potential for future urban infill.

### **2.2.3. Agricultural Crops – Mitigating Measures**

Rural lands in agricultural use protection mitigating measures could include the development of better cluster development siting requirements. These would require analysis of adjacent land use as well as the development site's features, to determine where to site the cluster development. Siting requirements could also be developed for the placement of individual residential structures and accessory buildings in Rural areas to allow for agricultural use of the remaining parcel acreage and neighboring acreages (houses could be required to be located closer to the road or adjacent to other existing homes, and driveways could be shared).

Potential development density could be permanently removed upon conversion of Rural zoned land to a higher density use such as urban residential, or other high value use, mitigation should be required for lost Rural land. Funds collected from this payment could be used to purchase conservation easements on identified high value farm and resource lands within the proposed UGA. City/County programs could be developed that purchase term based easements that would restrict development on the easement properties for a specified period (tied to the long-range development plan (20-40 year easements). A recent Washington State Supreme Court Decision identified the requirement to obtain water rights for developments that exceed the 5,000 gallons per day per project (exempt well).

This ruling results in Rural zoned parcels receiving a maximum of 6 lots (800/gal/day \* 6 equals approx 5,000/gal/day).

## **2.3 AIR QUALITY**

### **2.3.1. Air Quality – Existing Conditions**

#### **2.3.1.1. Climate**

One of the variables that influence air quality is climate. Weather does not cause high pollutant levels, but sometimes, under stable conditions, air pollutants may not disperse. The Liberty Lake area of Spokane County has a continental ("this climate is characterized by winter temperatures cold enough to support a fixed period of stable snow cover each year, and relatively low precipitation occurring mostly in summer" ([http://en.wikipedia.org/wiki/Continental\\_climate](http://en.wikipedia.org/wiki/Continental_climate))), semi-arid climate, with moderately cold winters and warm summers. The Cascade Mountains to the west shield the City from the direct modifying effect of Pacific Ocean air, and Idaho's mountains to the east help to protect it from the worst effects of arctic air in winter. Precipitation is concentrated in the cooler half of the year, with the summer typically having dry and stable weather. Mean annual temperature is 53°F with a typical range of 22°-84°F. The coldest months of the year are December and January. The warmest months are July and August. Average precipitation is 26 inches per year. Average snowfall during the three winter months is approximately 12 inches per month. Winds rarely exceed 20 miles per hour for extended periods. Fog is most frequent in the winter.

### **2.3.1.2. Air Quality**

Air Quality in Spokane County (including the City of Liberty Lake) is monitored by the Spokane County Air Pollution Control Authority (SCAPCA) and regulated under local, state and federal laws. The planning area is located in the Spokane Valley “airshed” and is subject to the air quality influences of the greater Spokane area. Within the planning area, topographical differences create areas with varying air quality due to differences in dispersal of pollutants and air mixing. Air quality in the Liberty Lake area is generally good with rare moderate to bad days.

Proximity to low density rural and forested areas cause the air in the Liberty Lake vicinity to be fairly free from noxious odors for an urban community.

There is one ambient air monitoring station in Liberty Lake operated by SCAPCA. At 23601 E. Valleyway there is a station that measures fine particulate matter (PM-10 and PM-2.5). The monitoring result shows mostly good air quality for the Liberty Lake area. Federal ambient air pollution standards exist for the following criteria pollutants: Particulate matter less than 10 microns in size (PM10), sulfur dioxide, oxides of nitrogen, ozone, carbon monoxide, and lead. Emissions of these and other pollutants such as toxic air pollutants and hydrocarbons are regulated under the Federal Clean Air Act (CAA).

The principal sources of air pollutants in the Liberty Lake vicinity are local industries, wood smoke, small gasoline powered engines, and construction activities. Vehicular traffic is the largest source of air pollution.

The entire Spokane Valley is affected by the trapping of smoke in the summer months due to inversions, but has recently attained compliance with all federal, health-based air pollutant standards

### **2.3.1.3. Local Industries**

Larger industries in this region can have an impact on air quality. According to SCAPCA, there are 11 registered facilities in the City of Liberty Lake which range from manufacturing, paint booths, gas stations, and sewer treatment facilities.

Pollutants may be in the form of stack discharges or odors from indirect sources. Currently the Department of Ecology and SCPACA regulate all other air pollution sources. There are a variety of small to medium sources of air pollution located throughout the greater Liberty Lake area. Some emit odorous compounds as well as criteria air pollutants.

### **2.3.1.4. Wood Smoke**

Primary sources of wood smoke are residential outdoor burning, fireplaces, wood stoves, and wildfires. Wood smoke is composed of fine particulates. Since 1992, only certified wood stoves may be sold and installed. SCPACA has a wood stove containment program in place. If pollutant levels get too high, SCPACA has the authority to curtail wood stove use and outdoor burning. Most of the residential development in Liberty Lake has occurred since 1992, so the majority of wood stoves are certified. Outdoor burning is banned in Liberty Lake and its surrounding urban growth area. Outdoor burning of natural vegetation is allowed in certain unincorporated areas of Spokane County.

### **2.3.1.5. Motor Vehicles**

Motor vehicles are the primary source of urban air pollution in the Liberty Lake area. Combustion products include carbon monoxide, oxides of nitrogen, fine particulates, and

sulfur oxides. Diesel vehicles emit high levels of particulates. Some diesel fleets have added exhaust retrofits to reduce harmful pollutants. There will be new standards for gasoline and diesel in the next few years that will also reduce vehicle emissions. Although vehicle emission standards continue to tighten and combustion efficiency improves, the number of vehicles on the road continues to grow as well, offsetting improved vehicle performance. Major transportation corridors such as Interstate 90 and primary arterials have the greatest air pollution impact. The most heavily traveled corridors include Interstate 90, Harvard Rd., Liberty Lake Rd., Appleway Ave., Country Vista Dr., and Molter Rd. Refueling of motor vehicles also contributes to the area's air pollution.

#### **2.3.1.6. Construction**

Construction generates particulate dust as a result of grading, truck traffic on dirt surfaces, demolition work, sand blasting, spray painting and outdoor burning of clearing debris and wood waste.

#### **2.3.2. Air Quality – Impacts**

All seven alternatives will increase discharges to the air from vehicular and construction related sources. Motor vehicles will likely have the most significant long-term effect, as suspended particulates, ozone, and carbon monoxide content will increase as automobile traffic increases.

##### Alternative 1 – No Action

This alternative is expected to push development within the City thus increasing density, traffic congestion, vehicle emissions, and air pollution.

##### Alternative 2 – Adjusted UGA Boundary – All Alternatives Included

This alternative is expected to push development within the City and proposed UGAs, thus increasing density, traffic congestion, vehicle emissions, and air pollution.

##### Alternative 3 – Adjusted UGA Boundary – NW area

This alternative is expected to push development within the City and proposed UGAs thus increasing density, traffic congestion, vehicle emissions, and air pollution.

##### Alternative 4 – Adjusted UGA Boundary – Entire SW area

This alternative would have effects similar to those of alternative 2 with more impact to air quality than alternative 2.

##### Alternative 5 – Adjusted UGA Boundary – SW area excluding east of Garry Rd. and west of Henry Rd.

This alternative would have effects similar to those of alternative 4 with more impact to air quality than alternative 2.



#### Alternative 6 – Adjusted UGA Boundary – SW area excluding east of Garry Rd.

This alternative would have effects similar to those of alternative 5 with more impact to air quality than alternative 2.

#### Alternative 7 – Adjusted UGA Boundary – SW area including east of Garry Rd. and west of Henry Rd.

This alternative would have effects similar to those of alternative 6 with more impact to air quality than alternative 2.

### **2.3.3. Air Quality – Mitigating Measures**

At the local level, mitigating measures may include actions such as discouraging industries with moderate to high pollution discharge, ensuring industry Best Management Practices (BMP's) are strictly followed, locating new industries with air pollution discharges away from residential and high occupancy commercial and business areas. Continuing education is required to address residential home heating with wood burning appliances to optimize energy efficiency and cleanliness. Prohibition of wood burning appliances areas may be appropriate. Zoning regulations that encourage creating mixed-use pedestrian and transit-oriented neighborhoods with residential, employment and shopping areas in close proximity may help reduce reliance on vehicles. Transportation Demand Management (TDM) strategies promoting multi-modal and alternative transportation options, such as walking, bicycling, riding transit (if available), carpooling, and working from home can be implemented to enhance the capacity of the transportation network and reduce vehicle emissions. Ongoing demand analysis for public transportation may also help. Construction impacts may be reduced with the requirement for dust suppression in the forms of containment via suspended plastic sheeting, watering dry dirt roads and work areas, pavement requirements, and suspending work during windy or extremely dry periods.

## 2.4 WATER RESOURCES

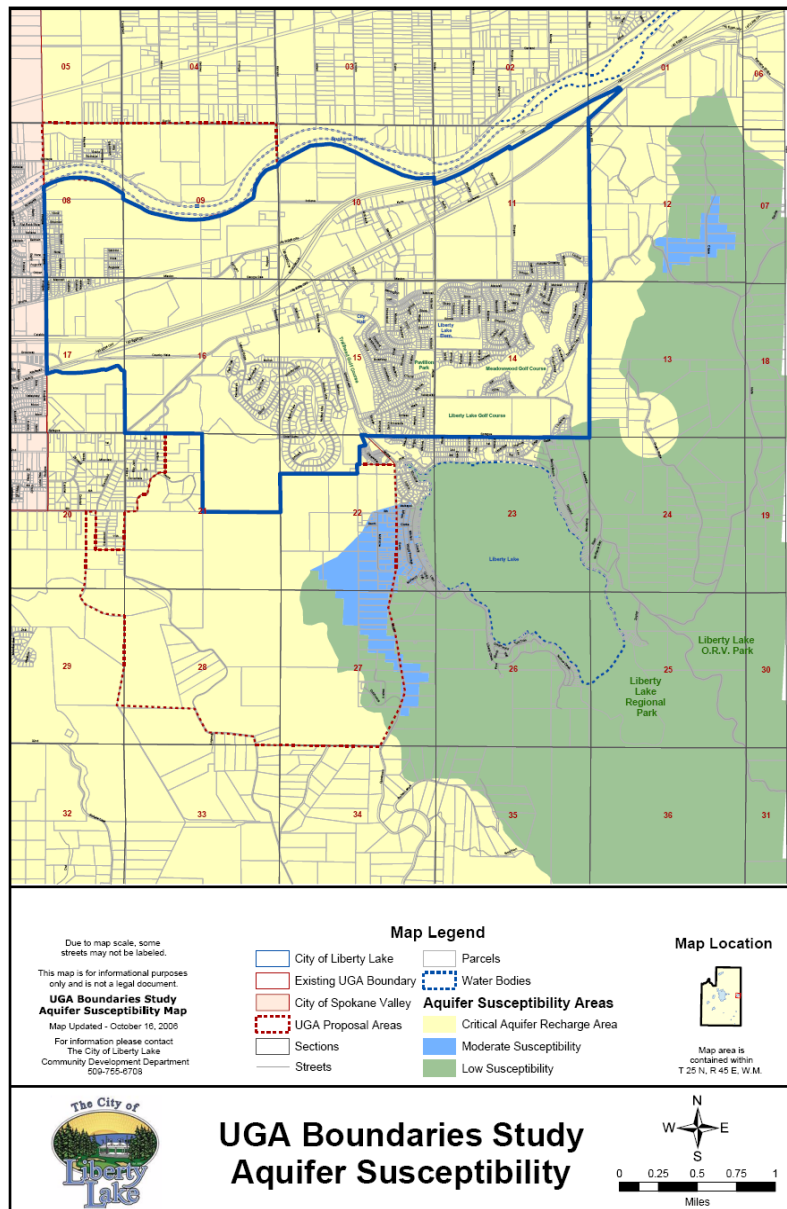
### 2.4.1. Water Resources – Existing Conditions

#### 2.4.1.1. Watersheds and Drainage

The planning area wholly or partially overlies 2 watersheds and critical to moderate susceptibility aquifer recharge areas.

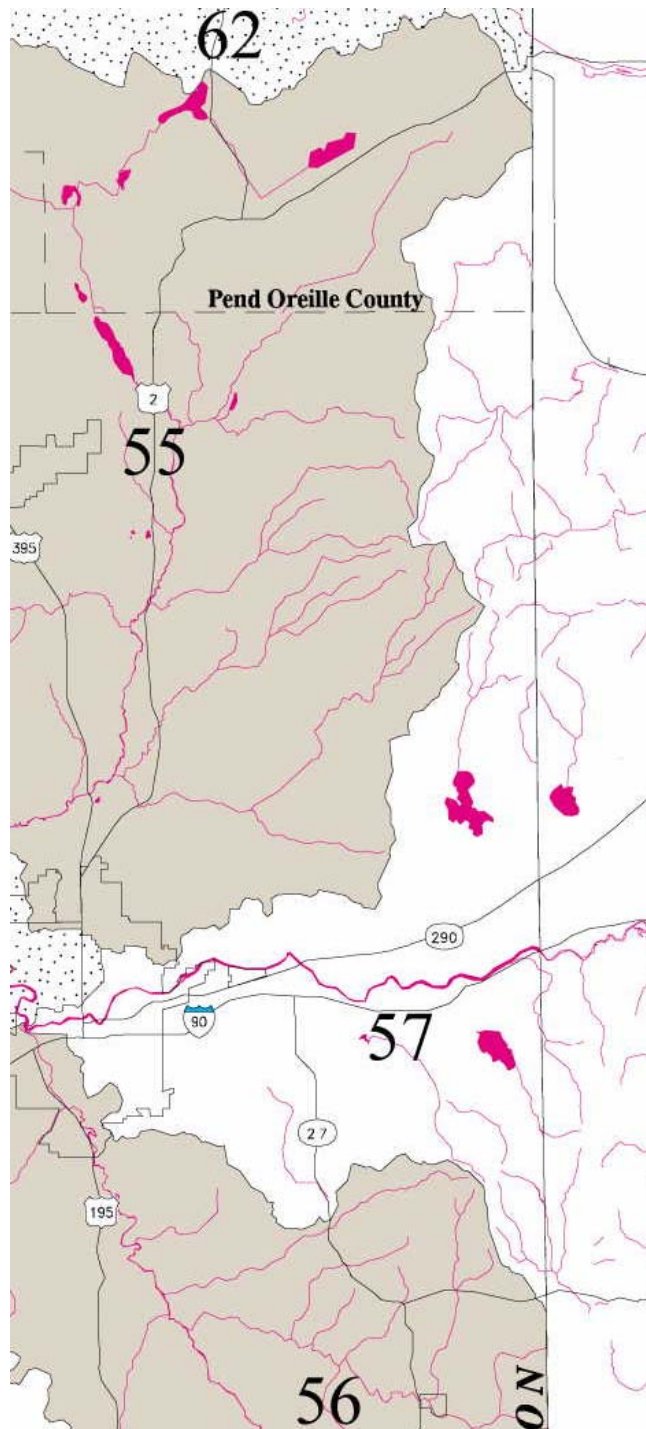
Each watershed and aquifer recharge area includes one or more year-round or seasonal streams or the Spokane River. The watersheds, drainage basins and streams are discussed in geographic order, beginning in the northwest and moving south and east in a clockwise direction. These include:

#### A. Aquifer Susceptible Areas



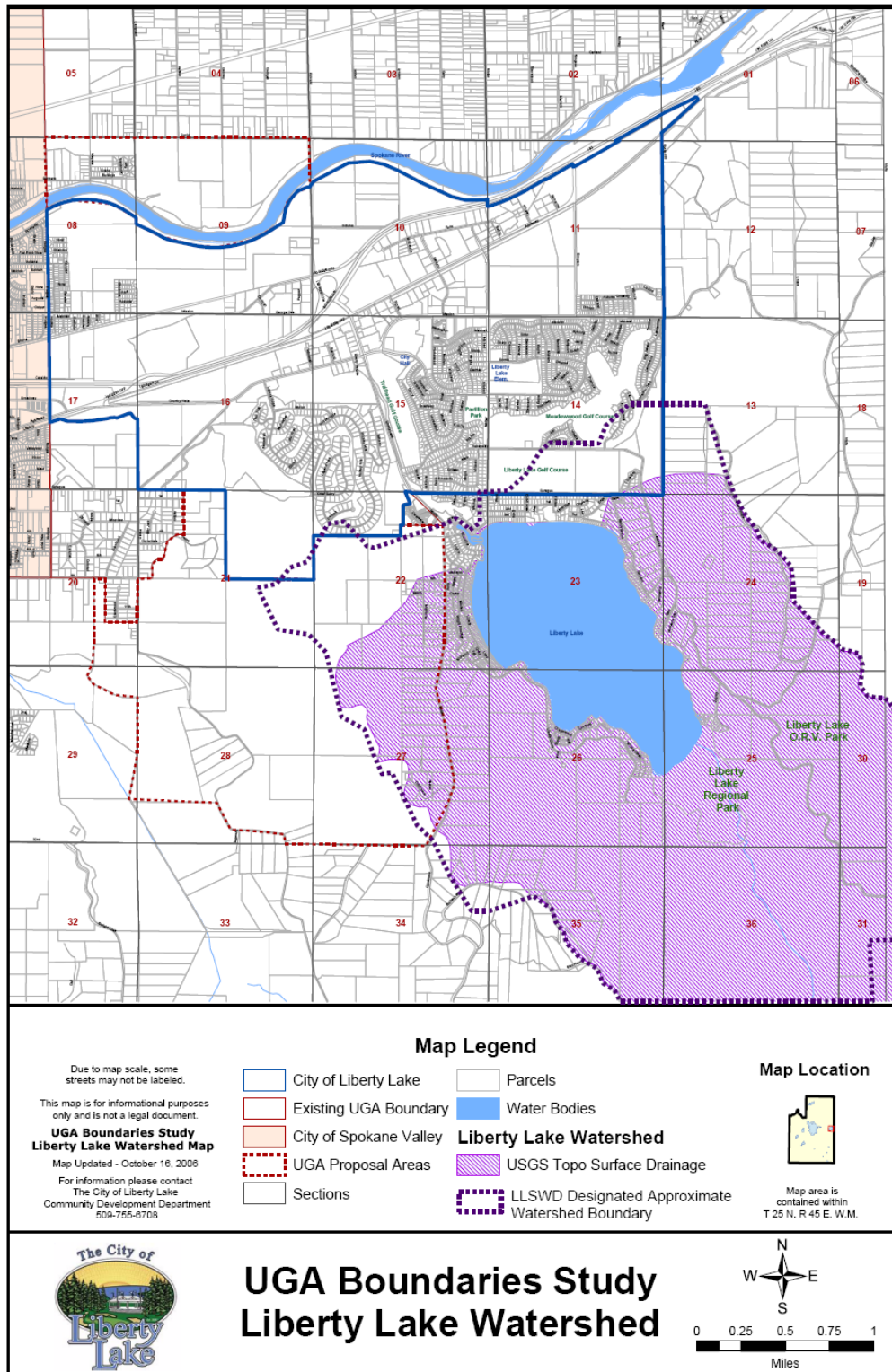
**MAP 2.5**

**B. WRIA 57 – Middle Spokane River Watershed**



**MAP 2.6**

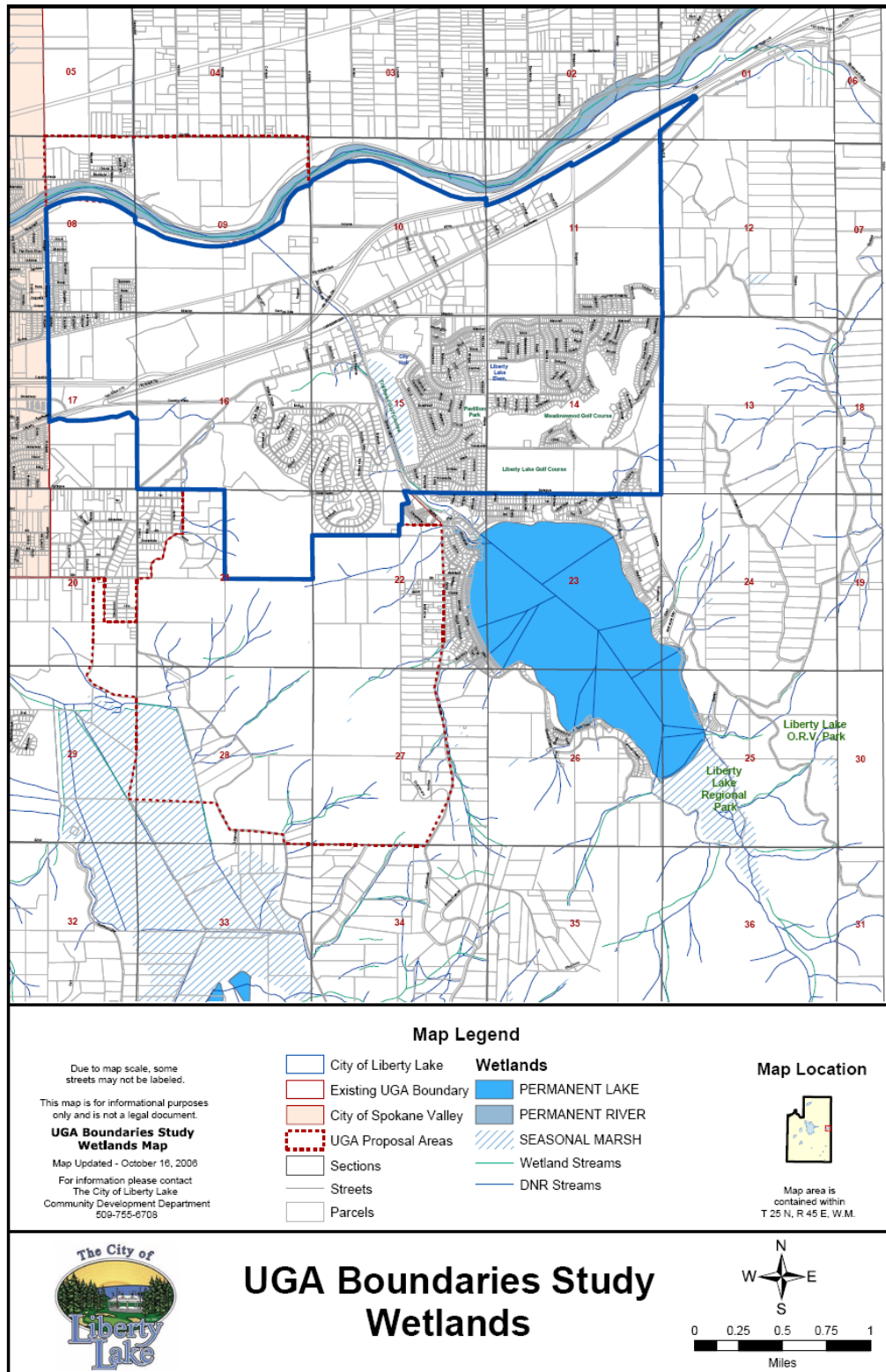
## C. Liberty Lake Watershed



**MAP 2.7**



## D. Seasonal Marsh, Wetland Streams, DNR Streams



**MAP 2.8**



## **A. AQUIFER SUSCEPTIBLE AREAS – Existing Conditions**

### **Drainage**

100% of the NW planning area lies in the Critical Aquifer Recharge Area (CARA). Approximately 90% of the SW planning areas lies in the CARA. The remaining 10% lies in either Moderate or Low Susceptibility.

### **Land Use**

The NW portion of the planning area is used for agriculture with associated residential uses and single family residential. This area also provides wildlife habitat, recreation, and fishing. There are no priority habitats or species in this planning area (see Map 2.9). The current Spokane County Shoreline designation for the portion of the Middle Spokane River (west of Harvard Rd.) that flows through the planning area is Pastoral and Conservancy. The proposed Spokane County Shoreline Designation (July 2006) is Rural Conservancy with 3 Identified Reaches of High Quality Areas.

The SW portion of the planning area is used for agriculture with associated residential uses and single family residential, with large areas of uncultivated hillside. This area also provides wildlife habitat and recreation. A small area in the southwest portion of the planning area contains priority habitat (see Map 2.9).

### **Water Quality**

The health of the Spokane Valley- Rathdrum Prairie Aquifer depends on high water quality. In 1978, the Spokane Valley-Rathdrum Prairie Aquifer was designated as a “sole source” aquifer under the authority of Section 1424(e) of the Safe Drinking Water Act. At that time approximately 340,000 people living in the Spokane area depended on this Aquifer as their only supply of drinking water. The water in the Aquifer was found to be of very high quality (CH2M Hill, pg. 1)

Groundwater contamination is a specific concern for the aquifer. Potential threats to the aquifer include failing septic systems, stormwater runoff from roads and residential development and fuel depot leaks. Additional threats include agricultural chemicals, agricultural nutrients (i.e. manure effluent) and potential chemical use (e.g. fertilizers and pesticides).

### **Wetlands**

The Spokane River reach that runs through the NW proposal is listed as a permanent river, a wetland stream, and a DNR Stream.

The SW planning area has numerous wetland streams and DNR streams, as well as a seasonal marsh known as the Saltese Flats immediately west of Henry Rd.

### **Flooding**

The NW planning area includes the Spokane River and FEMA Floodplains immediately adjacent to its shorelines.

The SW planning area has designated FEMA Floodplains immediately west of Henry Rd.

## **B. MIDDLE SPOKANE RIVER WATERSHED – Existing Conditions**

## **Drainage**

100% of the planning area lies within the Middle Spokane River Watershed (WRIA 57)

## **Land Use**

The NW portion of the planning area is used for agriculture with associated residential uses and single family residential. This area also provides wildlife habitat, recreation, and fishing. There are no priority habitats or species in this planning area (see Map 2.9). The current Spokane County Shoreline designation for the portion of the Middle Spokane River (west of Harvard Rd.) that flows through the planning area is Pastoral and Conservancy. The proposed Spokane County Shoreline Designation (July 2006) is Rural Conservancy with 3 Identified Reaches of High Quality Areas. The Spokane River is a shoreline of state-wide significance because it exceeds the two hundred cfs threshold, and has a drainage area in excess of three hundred square miles

The SW portion of the planning area is used for agriculture with associated residential uses and single family residential, with large areas of uncultivated hillside. This area also provides wildlife habitat and recreation. A small area in the southwest portion of the planning area contains priority habitat (see Map 2.9).

## **Water Quality**

The health of the Spokane River depends on many factors. Potential threats to the aquifer include failing septic systems, stormwater runoff from roads and residential development and fuel depot leaks.

Reaches of the Spokane River are listed as 303d (impaired) water bodies for levels of Total PCBs (polychlorinated biphenyls), Dissolved Oxygen, and Temperature. These reaches are east of the NW planning area, but not located within the planning area. Additional threats include agricultural chemicals, sewer discharge, agricultural nutrients (i.e. manure effluent) and potential chemical use (e.g. fertilizers and pesticides).

## **Wetlands**

The Spokane River reach that runs through the NW proposal is listed as a permanent river, a wetland stream, and a DNR Stream.

The SW planning area has numerous wetland streams and DNR streams, as well as a seasonal marsh known as the Saltese Flats immediately west of Henry Rd.

## **Flooding**

The NW planning area includes the Spokane River and FEMA Floodplains immediately adjacent to its shorelines.

The SE planning area has designated FEMA Floodplains immediately west of Henry Rd.

## **C. LIBERTY LAKE WATERSHED – Existing Conditions**

### **Drainage**

None of the NW planning areas lies in the Liberty Lake Watershed.

Approximately 45% of the entire SW planning area lies within the Liberty Lake Watershed as outlined in information provided by the Liberty Lake Sewer and Water District. Approximately 22% of the entire SW planning area lies within the Liberty Lake Watershed according to information provided by Spokane County as based upon USGS topographic surface drainage.

## **Land Use**

The NW portion of the planning area is used entirely for agriculture with associated residential uses and single family residential. This area also provides wildlife habitat, recreation, and fishing. There are no priority habitats or species in this planning area (see Map 2.9). The current Spokane County Shoreline designation for the portion of the Middle Spokane River (west of Harvard Rd.) that flows through the planning area is Pastoral and Conservancy. The proposed Spokane County Shoreline Designation (July 2006) is Rural Conservancy with 3 Identified Reaches of High Quality Areas.

The SW portion of the planning area is used for agriculture with associated residential uses and residential, with large areas of uncultivated hillside. This area also provides wildlife habitat and recreation. A small area in the southwest portion of the planning area contains priority habitat (see Map 2.9).

## **Water Quality**

The health of the Liberty Lake Watershed depends on many factors. Potential threats to the watershed include stormwater runoff from roads and residential development. Additional threats include potential chemical use (e.g. fertilizers and pesticides) and non-native vegetation.

In 1973 a special purpose sewer district was formed to provide sewer service to residents around the lake with the goal of protecting the water from failing septic systems, and the wastewater treatment plant was completed in 1982. There is currently a Aquatic Weed Management Plan in place to help reduce the amount of Eurasian milfoil in the lake ([www.libertylake.org](http://www.libertylake.org)).

Liberty Lake is currently listed as a 303d (impaired) water body for 4,4'-DDE (a metabolite of the now banned pesticide DDT) and Total PCBs.

## **Wetlands**

There are several wetland streams and DNR streams located in the portion of the SW planning area that is in the Liberty Lake Watershed.

## **Flooding**

There are no FEMA floodplains listed in the portion of the SW planning area that is located in the Liberty Lake Watershed

## **D. SEASONAL MARSH, WETLAND STREAMS, DNR STREAMS – Existing Conditions**

### **Drainage**

In the NW planning area the Spokane River is categorized as a Permanent River, a Wetland Stream, and a Type 1 DNR Stream. Type 1 streams require a 250' buffer from development.

In the SW planning area there are several Type 2-3 streams which require a 100' buffer, a few Type 4 streams requiring a 75' buffer, and several Type 5 streams which require a 25' buffer if they are connected to a Type 1-4 stream. A portion of seasonal marsh known as Saltese Flats is located in the SW planning area on the western edge.

## **Land Use**

The NW portion of the planning area is used for agriculture with associated residential uses and single family residential. This area also provides wildlife habitat, recreation, and fishing. There are no priority habitats or species in this planning area (see Map 2.9). The current Spokane County Shoreline designation for the portion of the Middle Spokane River (west of Harvard Rd.) that flows through the planning area is Pastoral and Conservancy. The proposed Spokane County Shoreline Designation (July 2006) is Rural Conservancy with 3 Identified Reaches of High Quality Areas.

Reaches of the Spokane River are listed as 303d (impaired) water bodies for levels of Total PCBs (polychlorinated biphenyls), Dissolved Oxygen, and Temperature. These reaches are east of the NW planning area, but not located within the planning area.

Additional threats include agricultural chemicals, sewer discharge, agricultural nutrients (i.e. manure effluent) and potential chemical use (e.g. fertilizers and pesticides).

The SW portion of the planning area is used for agriculture with associated residential uses and residential, with large areas of uncultivated hillside. This area also provides wildlife habitat and recreation.

The portion in the SW planning area containing the Saltese flats is primarily used for agriculture. A small area in the southwest portion of the planning area contains priority habitat (see Map 2.9).

## **Water Quality**

The Saltese Flats are one of the few remaining large wetlands in the Spokane area still somewhat intact. Potential threats to this watershed include urban runoff, septic tank leakage and fertilizer/pesticide runoff urban, and increased urban development.

## **Wetlands**

The Spokane River reach that runs through the NW proposal is listed as a permanent river, a wetland stream, and a DNR Stream.

The SW planning area has numerous wetland streams and DNR streams, as well as a seasonal marsh known as the Saltese Flats immediately west of Henry Rd.

## **Flooding**

The NW planning area includes the Spokane River and FEMA Floodplains immediately adjacent to its shorelines.

The SE planning area has designated FEMA Floodplains immediately west of Henry Rd

### **2.4.2. Water Resources – Impacts**

All seven alternatives have the potential to negatively impact surface water, groundwater, and wetlands. These impacts can be reduced through pollution prevention, wetland protection, wetland enhancement, and stormwater management plans.

#### Alternative 1 – No Action

The No Action alternative is expected to push growth and the impacts of growth not previously anticipated during the 2001 projections to existing City limits. This alternative would focus development and impacts in the existing City and would be expected to result in the least amount of land impacted by development. Increased development outside of cities and UGAs, where inadequate stormwater management facilities exist is likely to increase impacts to surface water, groundwater, and wetlands.

#### Alternative 2 (All Alternatives Included) – Adjusted UGA Boundary

This would expand development outside the existing UGA and would be expected to have the most significant and widespread impacts to surface water, groundwater, and wetlands.

#### Alternative 3 – NW Proposal

This alternative would concentrate urban development into compact areas and would be expected to have the least significant impacts to surface water, groundwater, and wetlands.

#### Alternative 4 – Entire SW Proposal

This alternative would be expected to have similar effects as alternative 2, but would create slightly less impact to surface water, groundwater, and wetlands than alternative 2.

#### Alternative 5 – SW excluding areas east of Garry Rd. and west of Henry Rd.

This alternative would be expected to have similar effects as alternative 4, but would create significantly less impact to wetlands and slightly less impact to the Liberty Lake Watershed than alternative 4.

#### Alternative 6 – SW excluding east of Garry Rd.

This alternative would be expected to have similar effects as alternative 4, but would create slightly less impact to the Liberty Lake Watershed than alternative 4.

#### Alternative 7 – SW area excluding west of Henry Rd.

This alternative would be expected to have similar effects as alternative 4, but would create significantly less impact to wetlands than alternative 4.

### **2.4.2.1. Surface Water and Stormwater – Impacts**

Surface water concerns focus on two major types of impacts: non-point source pollution, such as parking lot runoff, and the alteration of hydrological functions. Non-point source pollution, which is transported by stormwater runoff, may degrade the water quality of receiving waters, affect aquatic and riparian plant and animal life and create public health concerns. These concerns are especially significant in the Spokane River and Liberty Lake Watersheds, as well as in the CARA.

Watershed management concerns include managing stormwater runoff, conversion of forested land, preserving and restoring water quality, reducing the potential for flood damage to property, changes to stream processes that may result from increased stream flow; stream bank erosion and sedimentation; and removal of shoreline, wetlands



and stream riparian vegetation. Land uses that are potential sources of non-point source pollution include agriculture, residential, industrial, commercial, mining, public facilities; and road construction, use and maintenance.

Changes in the intensity of development and urbanization may impact water resources in several ways. Physical alterations to the land surface change the hydrologic functioning of aquifer recharge areas, drainages and receiving waters. Urbanization can affect the rate and amount of stormwater runoff, which could impact streams that receive the runoff. The degree of impact is dependent on impervious surface coverage associated with various types of land use.

When development occurs, peak flow discharges and storm flow durations may increase. Changes in overall hydrology will result in physical changes in stream and lake morphology. For example, increased stream discharge will increase scouring, lateral movement, channel enlargement and sediment transport as well as delta development where a stream enters a larger body of water. Physical changes that result from scouring can affect the quality and quantity of habitat that a stream provides. This may decrease species diversity and could adversely affect the ecosystem functions of a stream. Habitat alteration and destruction also result in increased colonization of more adaptive, competitive or invasive species.

Urban lifestyles introduce a variety of pollutants to waterways resulting from activities such as construction, transportation systems, residential use of pesticides and herbicides, energy consumption, waste disposal and recreational activities. Pollutants transported in stormwater runoff may degrade the water quality of receiving waters, affect aquatic and riparian plant and animal life and create public health concerns.

The impact on humans is both direct and indirect. Expenses to offset environmental degradation may increase, thereby affecting other aspects of the economy and social structure.

Development in the planning area will increase impervious surface area resulting in increased quantities of stormwater runoff that could potentially have negative impacts on the planning area's water resources. The Spokane River and Liberty Lake watersheds are especially at risk.

#### **2.4.2.2. Wetlands**

The filling of wetlands or the alteration of wetland hydrology by surface water diversion could result in the loss of wetland functions and could produce a corresponding increase in stormwater peak flows and corresponding decrease in water quality.

Wetland habitat loss is also a concern.

#### **2.4.2.3. Groundwater**

The alteration of hydrological functions is also of great concern. Urbanization can affect the rate and amount of stormwater runoff, which could impact streams that receive the runoff. Groundwater concerns focus on pollution caused by hazardous household wastes, solid waste disposal and increased impervious surface runoff that result from increased urban development. Wetland concerns focus on the alteration of wetland hydrology that results when wetlands are filled and/or built around. It is important to maintain adequate riparian buffers when building around wetlands.

Most groundwater recharge is accomplished through direct precipitation. Infiltration of septic tank leachates, urban runoff and other waterborne pollutants may pollute groundwater. A form of groundwater pollution that is a public health concern is excess nitrates originating from the effluent of faulty septic systems and application of, or runoff from, animal wastes. Additional areas of concern due to urban development are

agricultural pesticides, hazardous household wastes, solid waste disposal (landfills, illegal dumping, wood wastes, etc.) and increased impervious surface runoff.

### **2.4.3. Water Resources-Mitigating Measures**

#### **2.4.3.1. General**

Water resource impacts may be mitigated through a variety of actions. Adopting and implementing site design and stormwater management standards, as well as using best management practices for the treatment and control of stormwater runoff, are important mitigation procedures. The City of Liberty Lake and Spokane County are in the process of reviewing and updating Stormwater Management Plans in anticipation of the National Pollutant

Discharge Elimination System (NPDES) Phase II permit requirements as yet undesignated by the State. This requires small municipal, separate storm sewer system operators to follow six minimum control measures to meet the NPDES requirements.

The six minimum control measures include: public education and outreach, public participation/involvement, discharge detection and elimination, construction site run-off control, post-construction run-off control and pollution prevention/good housekeeping.

City and County zoning regulations and critical areas standards currently provide programmatic mitigation of impacts to water resources. Site design standards that include building setbacks, required open space, impervious surface limitations and dimensional standards can encourage compact development patterns. Flexible standards can allow property owners to achieve development goals while minimizing impacts of development on wetlands, streams and critical areas. Stormwater management standards that require on-site stormwater control and treatment limit postdevelopment stormwater peak flows. This can reduce impacts to surface water quality and stream channels.

County and City critical areas ordinances successfully preserve wetlands and riparian zones if properly implemented and enforced. Critical areas regulations place limits on wetland fill and require buffers around wetlands. These reduce impacts to streams and wetlands and help maintain valuable wildlife habitat.

Federal and State regulatory measures also protect wetlands and streams. The National Pollution Discharge Elimination System (NPDES) restricts the type and amount of pollutants that can be discharged to surface waters. Federal wetlands regulations limit the amount and type of activities that can take place around wetlands. Through the Hydraulics Approval process, the state regulates activities such as stormwater discharges that may affect fish habitat.

Measures to mitigate impacts on surface water can also be effective in mitigating groundwater impacts. Limitations on impervious surfaces can help preserve aquifer recharge capacity. Regulations that limit pollutant discharges to surface waters also protect groundwater as do State groundwater protection regulations.

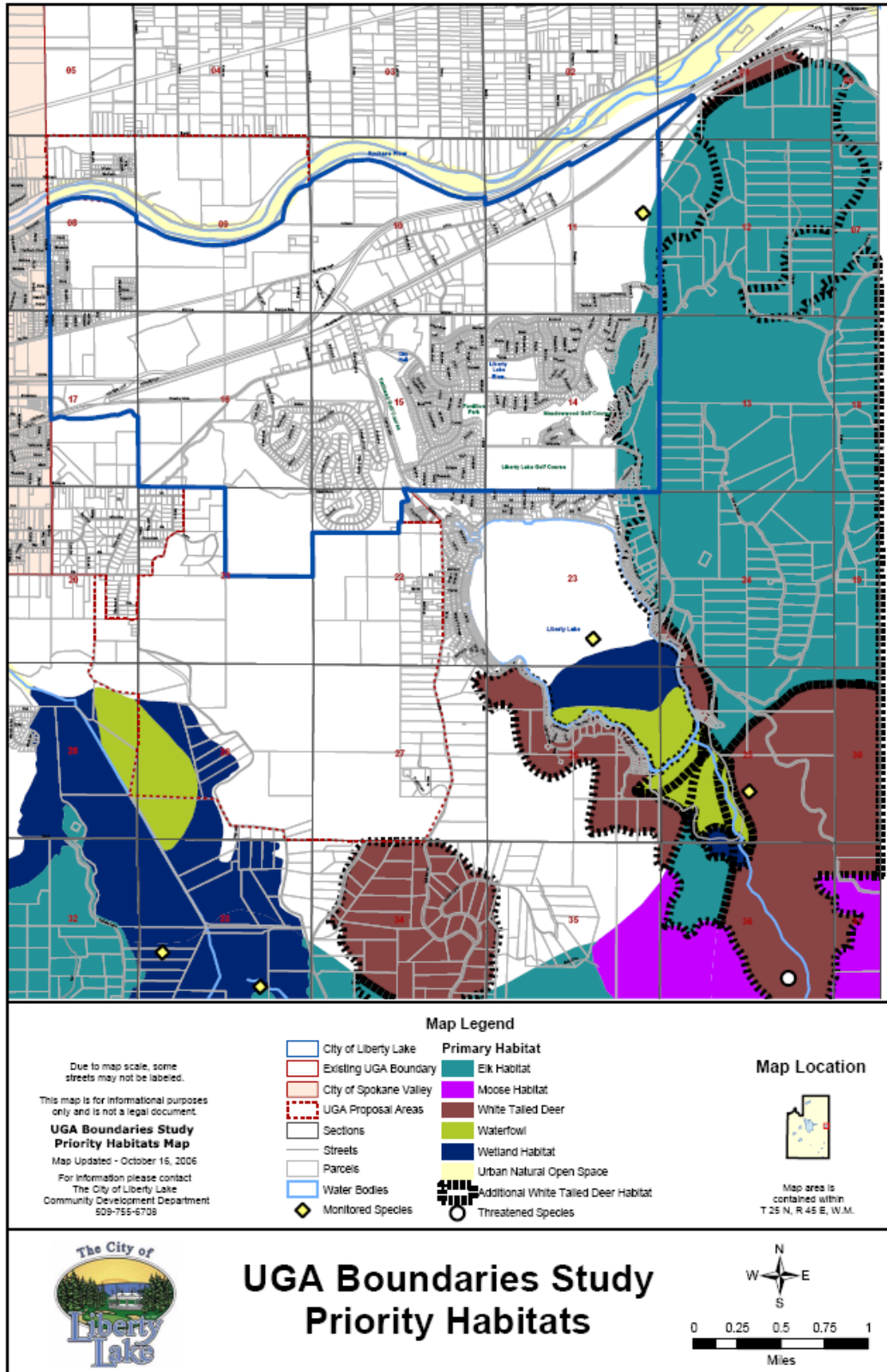
#### **2.4.3.2. Watersheds and Drainages**

Development of areas within watersheds that drain to Liberty Lake and Spokane River should include mitigation for water quality (treatment) and quantity (retention and detention) to meet both City and County standards. Retrofitting existing stormwater systems in these areas should be explored to mitigate for existing water quality discharge problems.

Stormwater management and water quality are important to all surface waters within the planning area to protect all beneficial uses.

Retention of remaining wetlands in these areas is important to maintaining flow levels in these streams. Wetlands protection also helps alleviate flooding and filter pollutants. Some residences in the Liberty Lake Watershed contain existing homes that utilize on-site sewage facilities. This area should be monitored regularly for the presence of fecal contaminants in surface runoff. Strong consideration should be given to this area to be connected to municipal sewerage. Development or redevelopment of this area will require stormwater mitigation meeting City and County standards. Existing septic systems should be converted to public sewer and urban storm drainage systems should be required for all new development throughout all proposed UGA alternatives.

## 2.5 PLANTS AND ANIMALS



**MAP 2.9**

## **2.5.1 Plants and Animals – Existing Conditions**

Population growth, urbanization and associated activities pose the greatest threat to plants, wildlife and the habitat they depend on. Permanent removal or alteration of habitat is the result of converting land to industrial, commercial or residential use. Urbanization, industrial and commercial development, and agriculture have reduced the number of native plants and animals previously found in and around the City of Liberty Lake and the UGA. Problems associated with development include vegetation alteration or removal, fragmentation and loss of open space and natural corridors, introduction of non-native plant species, impervious surfaces, pesticide and fertilizer application and contaminant runoff. These create a cumulative effect adversely impacting wildlife populations, diversity and health.

The purpose of analyzing plants in the planning area is to determine if there are rare or endangered plant species and to discuss the relationship between these plants and their surrounding environment and natural systems. The purpose of analyzing animals in the planning area is to determine their general habitat requirements and to identify the presence of rare or endangered species. When species or habitats are determined to be significant, appropriate land use policies should be applied which will augment conservation. The overall health of the plants and animals that make up an ecosystem is an indicator of the suitability of that system for human habitation and the quality of life that is enjoyed there.

The planning area is characterized by a variety of wildlife habitats including forested lots, wetlands, freshwater riparian habitat, bedrock outcrops, and developed lands, which dissect and isolate other habitat types while providing some areas of limited value edge habitat. Identified habitat zones in the planning area are forest, field-and-thicket, disturbed land, wetlands, riparian woodland, and fresh-water aquatic.

### **2.5.1.1. Wildlife Habitat and Diversity**

#### **2.5.1.1.1. Forest**

There is no significant forest habitat located in any of the planning areas.

#### **2.5.1.1.2. Field and Thicket**

The field and thicket habitat includes rural lands in agricultural uses, pastures, yards, hedgerows, roadside thickets and dense underbrush. This habitat occurs throughout the planning area where forest has been cleared for farming and residential. Mammals present include opossums, moles, cottontails, chipmunks, raccoons, weasels, skunks, coyotes, fox, and deer. Reptiles include lizards and garter snakes.

Amphibians include salamanders, toads and frogs. Common birds include, but are not limited to swallows, flickers, woodpeckers, and sparrows.

#### **2.5.1.1.3. Disturbed Land**

This habitat can be characterized as land that has been converted from a natural state (such as forest or wetland) to residential, commercial or industrial developments. In many of these areas the natural vegetation and soils have been altered or replaced by non-native vegetation, soils and landscaping. A variety of plants and animals adapt to these environments. Cleared and disturbed lands are subject to being overtaken by native and non-native and invasive plants.

A variety of mammals inhabit disturbed land such as cottontails, fox, rats, mice, and coyotes. Birds favoring disturbed land include gulls, hummingbirds, kingfishers,

swallows, jays, ravens, crows, blackbirds, hawks and songbirds. This habitat is predominant in developed areas in and adjacent to the planning areas

#### **2.5.1.1.4. Edge Habitat**

Edge habitat occurs where two different habitats abut and overlap, providing a wider range of food and cover than what one habitat can provide. The greatest diversity of animal species occurs in edge habitats. Many species of animals, particularly birds and large mammals, utilize several types of habitat that edge areas offer. A species may forage for food in lowland clearings and return to forested areas for shelter. The planning area provides many edge habitat zones in areas scattered with wooded lots, wetlands and developed lands.

The edge area between forest and cleared or developed land is a particularly productive habitat for birds. Typical birds in this habitat include hawks, jays, grouse, kestrels, doves, barn owls, hummingbirds, flycatchers, swallows, blackbirds, finches, woodpeckers and sparrows.

#### **2.5.1.1.5. Wetlands**

Wetlands and aquatic areas provide the most productive of all habitat types. Wetlands serve as natural catchment basins for precipitation, augment groundwater recharge, reduce surface runoff intensity and reduce soil erosion. They also provide excellent habitat and food for a multitude of plants and animals.

Shallow ponds and swamps may contain pondweed, duckweed, pond lilies, milfoil, elodea, and algae. Cattails, horsetails, nightshade, rushes, and sedges grow on lands surrounding these shallow ponds and swamps. Wetlands and surrounding riparian woodlands attract mammals that prefer to reside adjacent to freshwater, including shrews, beaver, muskrats, raccoons, weasels, minks, and otters.

Reptiles include turtles and garter snakes. Amphibians include newts, salamanders, toads, and frogs. Typical wetland birds are grebes, swans, geese, ducks, hawks, swallows, crows, and blackbirds.

#### **2.5.1.1.6. Riparian Areas**

Riparian vegetation along the Spokane River corridor in the planning area is limited for the most part to narrow, discontinuous bands directly bordering the river.

#### **2.5.1.1.7. Freshwater Aquatic**

The reach of the Spokane River in the planning area represents glide/riffle habitat with cobble or scoured substrates, and is ideal for rainbow and cut throat trout, bluegill, and perch. Fish are dependent on complex and diverse stream habitats to provide food, spawning and rearing areas as well as other functions.

Many species of animals depend on wetland or riparian habitats at some point in their life cycle. Aquatic type birds found in the planning area include geese, ducks, eagles, falcons, osprey, Heron, plovers, killdeer, snipes, kingfishers, swallows, and blackbirds.

#### **2.5.1.1.8. Migration Routes and Wildlife Corridors**

Remnant contiguous tracts of forested lands and stream riparian zones provide important wildlife corridors. Corridors promote migration which may help maintain biodiversity, increase population sizes, provide increased foraging areas for wideranging species, provide predator escape cover and provide a mix of habitats for species that

require a range of habitats through the different stages of their life cycles. There is a White Tailed Deer migration route on the eastern edge of the City and the lake, but is not located within or directly adjacent to the planning areas.

#### **2.5.1.2. Priority, Threatened and Endangered Species and Habitats (See Map 2.9)**

##### **2.5.1.2.1. Endangered Species**

The Revised Code of Washington defines an endangered species as any wildlife species native to the state of Washington that is seriously threatened with extinction throughout all or a significant portion of its range within the state. There are no endangered species found in or around the planning areas.

##### **2.5.1.2.2. Threatened Species**

Threatened is defined by the Washington Administrative Code as any wildlife species native to the state of Washington that is likely to become an endangered species within the foreseeable future throughout a significant portion of its range within the state without cooperative management or removal of threats. Federal and state threatened species include the bald eagle and Lynx.

Threatened species have been spotted northeast of the SW planning area, but no sites are located within or immediately adjacent to the planning areas.

##### **2.5.1.2.3. Priority and Sensitive Species**

The Washington Administrative Code defines sensitive species as a species that is native to the state of Washington and is vulnerable or declining and is likely to become endangered or threatened in a significant portion of its range within the state without cooperative management or removal of threats. A priority species is fish or wildlife that requires protective measures and/or management guidelines to ensure perpetuation. Sensitive species are determined to be in danger of failing or declining or are vulnerable due to factors such as limited numbers, disease, predation, exploitation or habitat loss or change. These include listed species, vulnerable species, recreationally important species and species of local importance. Protection measures for threatened and endangered species aim toward restoring their populations to self-sustaining levels. Some of the monitored species found south and east of the SW planning area include Red-necked Grebes, Common tortoiseshell, Grasshopper sparrow, and Osprey. No sites are located within or immediately adjacent to the planning areas.

##### **2.5.1.3. Plants**

No rare plants were found to be in any of the planning areas.

##### **2.5.1.3.1. Priority Habitats**

Priority habitats may possess habitat elements such as shorelines, caves or snags that have high value to fish and wildlife. Priority habitats may also possess a unique vegetation type, or be dominated by a plant species that is of primary importance to fish and wildlife. Priority habitats may also have elements with which a given species has a primary association, and which, if altered may reduce the likelihood that the species may flourish over time. Priority habitats have one or more of the following attributes:

- Relatively high fish and wildlife density.
- High fish and wildlife species diversity.

- Significant breeding habitat.
- Contains unique or dependent species.
- Has a high vulnerability to habitat alteration and degradation.
- Is an important fish and wildlife movement corridor.
- Limited distribution of the habitat type.
- Habitats that serve as seasonal range.

There are no Priority Habitats located in or near the NW planning area.

There are 2 Priority Habitats found in the SW planning area; specifically Alternatives 2, 4, and 6. These habitats are identified as Waterfowl and Wetland Habitat (see Map 2.9).

#### **2.5.1.4. Fisheries**

##### **2.5.1.4.1. Existing Fish Species**

Drainages within the planning area have a variety of habitats that support several species of trout, perch, bass, Bluegill crappie and catfish.

##### **2.5.1.5. Fish Habitat**

Several characteristics make up ideal fish habitat. Although the habitat needs of each fish species vary according to age and activity, the basic components of stream and lake habitats include the following features:

- Adequate water depth and velocity for spawning, rearing, and holding.
- Cool temperatures for spawning, rearing, and holding (45-60 degrees F).
- Abundance of bank and in-stream structures to provide cover, dissipate stream energy, and stabilize banks and beds.
- Appropriate substrates for spawning and embryonic development. For freshwater salmonids and chars, substrates range from gravel to cobbles (0.5-6.0 inches in diameter) that are relatively stable and free of fine sand and silt.
- Presence of adequate riparian vegetation, which provides habitat for aquatic and terrestrial insects that fish rely on for food. Overhanging vegetation also provides shade that moderates stream temperatures and large woody debris for in-stream fish cover.

There are several watersheds and drainage basins that provide fish habitat within the planning areas.

#### **3.5.2. Plants and Animals – Impacts**

The greatest threat to plants and animals is the conversion of land to urban uses, causing fragmentation, degradation and loss of habitat. The loss of open space, fragmented landscapes and degradation of habitat, in conjunction with associated urban impacts such as pesticide and herbicide use, air and noise pollution, domestic animals and night lighting create a cumulative effect, impacting diversity and health of plant and wildlife populations.

The ecological value of a habitat partially depends on the quantity, diversity and distribution of plants. Disturbance of plant communities will result in the removal of plants and alteration of the habitat affecting the diversity, distribution and quantity of plants.

Ground disturbance and removal of vegetation often result in the establishment of invasive or more aggressive plant species, preventing the reestablishment of native species and reducing ecological value. Removal of vegetation allows the underlying habitat to receive additional light and moisture, which may alter the habitat of the plant and animal species that utilize the vegetative cover. Vegetation removal may allow for increased erosion and runoff, resulting in increased sedimentation and scouring of



streams. Vegetation removal along waterways will result in a loss of riparian cover, affecting water temperature and quality. Habitat value is dependent on biodiversity and availability of food, water and cover. Complete loss of habitat will displace the species that inhabit the site and cause them to migrate to other suitable habitats. Displacement may result in exceeding the carrying capacity of the receiving area, resulting in the loss or reduction of the local population and crowding and increased stress on other species. Alteration of a habitat may result in the introduction of more adaptable species that may displace existing populations. Habitat disruption during breeding, nesting and rearing seasons can adversely impact a local population. Many species of animals depend on wetland or riparian habitats at some point in their life cycle. The alteration, degradation or disruption of wetland or riparian habitats and their associated buffers may have a significant effect on a larger number of species than the disruption of a grass, shrub or forested habitat alone. Under all four of the alternatives, development will occur in response to the increase in population, resulting in immediate impacts as well as cumulative impacts as outlined above. The area within the City of Liberty Lake and the existing UGA have experienced some degree of habitat degradation due to existing land use patterns that limit effective mitigation efforts. Although open space areas with suitable habitat and connecting corridors can be set aside or created, the cumulative effects of urban encroachment will continue to stress and place pressure on plant and wildlife populations. The alternatives that require enlarging the UGA will have the highest impacts on habitat. Concentrating development in areas that have already been significantly impacted by development will have the least impact on habitat.

#### Alternative 1 – No Action

The No Action alternative is expected to push growth and the impacts of growth not previously anticipated during the 2001 projections to the existing City limits. This alternative would focus development and impacts in the existing City and would be expected to result in the least amount of land impacted by development.

#### Alternative 2 (All Alternatives Included) – Adjusted UGA Boundary

This would expand development outside the existing UGA and would be expected to have the most significant and widespread impacts to plants and animals.

#### Alternative 3 – NW Proposal

This alternative would concentrate urban development into compact areas and would be expected to have less significant impacts to plants and animals than alternatives 2, 4, 5, 6, and 7.

#### Alternative 4 – Entire SW Proposal

This alternative would be expected to have similar effects as alternative 2, but would create slightly less impact to plants and animals.

#### Alternative 5 – SW excluding areas east of Garry Rd. and west of Henry Rd.

This alternative would be expected to have similar effects as alternative 4, but would create significantly less impact to wetland and waterfowl priority habitats than alternative 4.

#### Alternative 6 – SW excluding east of Garry Rd.

This alternative would be expected to have similar effects as alternative 4, but would create less impact to plants and animals.

#### Alternative 7 – SW area excluding west of Henry Rd.

This alternative would be expected to have similar effects as alternative 4, but would create significantly less impact to wetland and waterfowl priority habitats than alternative 4.

### **2.5.3. Plants and Animals- Mitigating Measures**

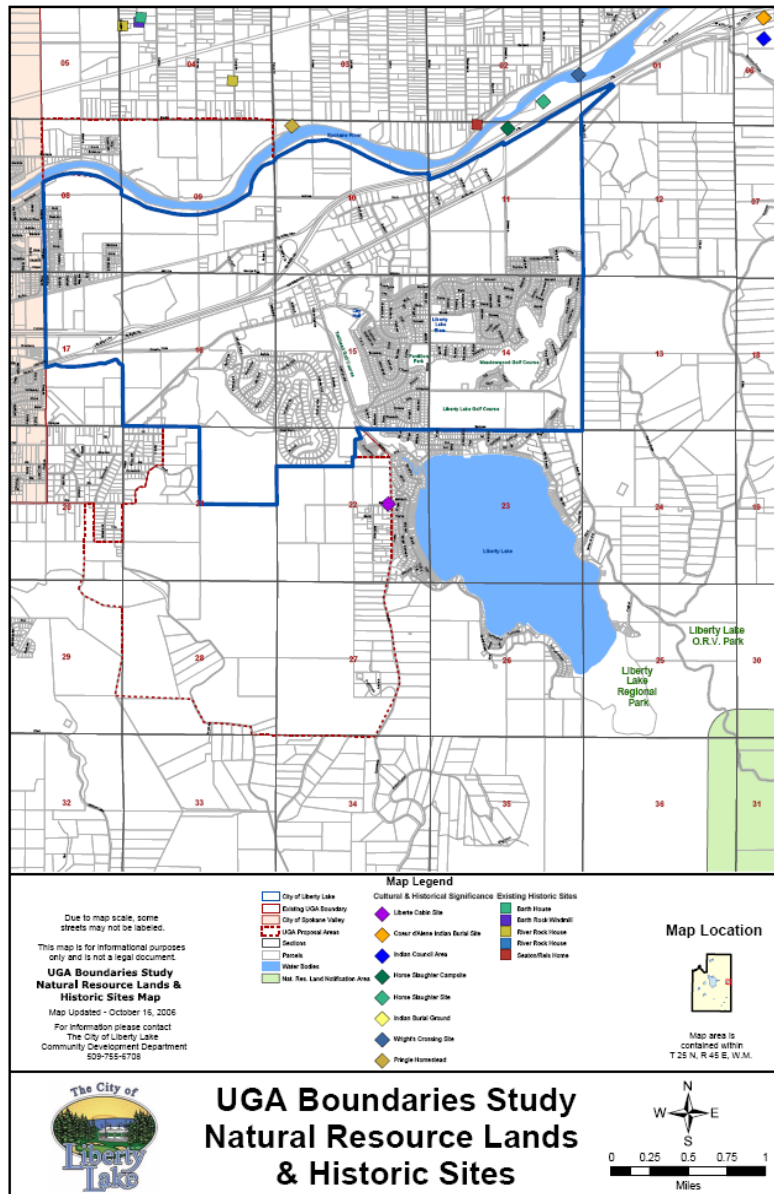
Mitigating measures to minimize the effects of development primarily focus on reducing the destruction and alteration of the habitats plants and animals depend on to survive.

Mitigation measures include:

- Identify priority habitats (woodlands, grasslands, streams and wetlands) of local importance based on best available science.
- Develop and revise critical area regulations based on best available science that prevents or avoids impacts to priority habitats, require mitigation for impacts that a development may have on habitats, provide adequate buffers so that the habitat's functions and values are not degraded and encourage restoration of properly functioning habitat conditions where feasible.
- Develop and utilize programs that will educate the public about practices (toxic disposal, pesticide and herbicide use etc.) that can alter habitat or harm animals and plants. Provide educational materials regarding invasive plant species and on improving and designing landscapes that benefit wildlife and stream corridors.
- Develop a program to remove invasive or noxious plant species on public land.
- Promote low impact development techniques and the reduction of impervious surfaces where possible.
- Adopt stormwater management techniques that adequately treat stormwater runoff of toxic substances and releases stormwater runoff at pre-development rates.
- Develop programs to improve or restore habitat functions through planting native plant species or other appropriate means.
- Habitat restoration and improvement programs should focus on improving biodiversity rather than focus on single species protection.
- Identify obstacles to fish passage and develop a program to remove them.
- Utilize best management practices to prevent if possible, or reduce the amount of erosion affecting priority habitats and reduce the amount of sediments entering streams and wetlands.
- Develop a wildlife corridor plan on a landscape scale that connects open space, parks and priority habitats utilizing stream corridors, wetlands, drainages, greenways, greenbelts and buffers.
- Protect sensitive habitats with low impact land use designations and provide adequate buffers.
- Encourage through incentives or development regulations, high density, compact or clustered development that will minimize the amount of land needed to accommodate growth.

- Continue to implement and develop various financial incentives to preserve open space areas, including but not limited to tax benefits, purchase or donation of conservation easements and the purchase or transfer of development rights.
- Continue to utilize grants, donations and other funding sources to acquire open space in order to preserve habitat and wildlife corridors.
- Collaborate with private and public organizations to identify, acquire preserve, operate and maintain open space areas in order to preserve habitat and habitat connectivity.
- Require habitat conservation plans for development proposals that include tracts of land set aside as open space or habitat.
- Establish a mitigation-monitoring program to ensure that mitigation measures achieve goals and continue to be effective by utilizing adaptive management techniques.
- Require a habitat assessment and appropriate mitigation measures to reduce impacts for development proposals on large parcels and on properties where priority habitat is known to exist.

## 2.6 NATURAL RESOURCES



**MAP 2.10**

### 2.6.1. Mineral Resources

#### 2.6.1.1. Mineral Resources - Existing Conditions

According to State Department of Natural Resources, there are no significant mineral resources in the City of Liberty Lake or the Urban Growth Area. Additionally, there are no Mineral Resource Land designations in these areas.

#### 2.6.1.2. Mineral Resources –Impacts

Development in the planning area will impact not significant mineral resources.

#### 2.6.1.3. Mineral Resources - Mitigating Measures

None Proposed

## **2.6.2. Forest Resources**

### **2.6.2.1 Forest Resources-Existing Conditions**

Forest coverage in the planning area is scattered and fragmented due to historical agricultural practices and residential and commercial development. There are no properties that have Rural Forestry or Commercial Forestry land use designations within the City or the planning areas.

#### **2.6.2.2. Forest Resources – Impacts**

Development in the planning areas will not significantly impact forest resources.

#### **2.6.2.3. Forest Resources – Mitigating Measures**

The City will continue to require protection of existing trees as set forth in the City of Liberty Lake Development Code, Article 10-3C, Landscape Conservation.

## **2.7 SCENIC RESOURCES**

### **2.7.1. Scenic Resources – Existing Conditions**

Scenic is defined as a pleasing view of natural features. City of Liberty Lake and the surrounding area have an abundance of scenic natural resources that contribute to the quality of life and draw visitors to the area. Scenic opportunities range from broad viewsheds, pastoral, narrow view corridors and scenic vistas to open space areas. Greenbelts, parks, and open space, offer scenic resources within Liberty Lake's urbanized area.

#### **Scenic View Preservation**

Trees and significant stands of vegetation are considered a scenic resource by some people, but can also be considered undesirable to people concerned about views being obscured from residential properties. The Liberty Lake Development Code Article 10-3C prevents the indiscriminate removal of significant trees and other vegetation, including vegetation associated with streams, wetlands and other protected natural resource and critical areas.

#### **2.7.2. Scenic Resources – Impacts**

Scenic resources can be impacted by the built environment. Scenic resources can be obscured by new structures and developments or degraded with the placement of signs, telecommunication facilities, bright or flashing lights, and utility lines. Scenic resources can also be directly altered by development and grading.

The changing urban built environment throughout the planning area will affect scenic resources and views of the natural environment. There are no scenic resources that have protected status in the planning areas.

### **Alternative 1 – No Action**

The No Action is expected to push growth and the impacts of growth not previously anticipated during 2001 projections to the existing City limits, thus increasing vehicle emissions, air pollution, and atmospheric haze.

Alternative 2 (All Alternatives Included) – Adjusted UGA Boundary

This would expand the development pattern outside the existing UGA and would be expected to have the largest increase vehicle emissions, air pollution, and atmospheric haze.

Alternative 3 – NW Proposal

Under this alternative, new growth would be directed into the existing City and Urban Growth Area, but would require a minor expansion of the UGA. This alternative would be expected to have much smaller effects than alternative 2.

Alternative 4 – Entire SW Proposal

This would expand development outside the existing UGA and would be expected to create widespread impacts to scenic resources, but on a smaller scale than alternative 2.

Alternative 5 – SW excluding areas east of Garry Rd. and west of Henry Rd.

This would expand development outside the existing UGA and would be expected to create widespread impacts to scenic resources, but on a smaller scale than alternatives 2 and 4.

Alternative 6 – SW excluding areas east of Garry Rd.

This would expand development outside the existing UGA and would be expected to create widespread impacts to scenic resources, but on a smaller scale than alternatives 2 and 4, but slightly more than 5.

Alternative 7 – SW excluding areas west of Henry Rd.

This would expand development outside the existing UGA and would be expected to create widespread impacts to scenic resources, but on a smaller scale than alternatives 2 and 4, but slightly more than 5.

**2.7.3. Scenic Resources – Mitigating Measures**

- Develop and implement view protection regulations that require analysis of viewsheds in relation to the mass and height of a development proposal.
- The City of Liberty Lake and Spokane County should coordinate planning and acquisition efforts in order to maximize opportunities in the purchase or preservation of properties with high scenic value.
- Preserve existing sensitive areas to utilize as open space by encouraging development regulations that promote clustered, mixed use high-density development. Require all development to consider impacts on viewsheds and view corridors and apply mitigation measures to protect views.
- Continue to implement and update the adopted goals and policies regarding scenic resources and views, identified in the Spokane County Parks and

Recreation Open Space Plan, and the City of Liberty Lake's Comprehensive Plan and Development Code along with the appropriate capital facilities plans.

- Utilize appropriate land use designations to minimize development pressure on properties that have a high scenic resource value.
- Continue to implement and update vegetation retention and re-vegetation on properties with high scenic value.
- Collaborate with private and public organizations to identify, acquire preserve, operate and maintain park and open space areas that have scenic resources
- Utilize existing funding sources such as conservation futures and explore new funding sources such as bonds to acquire parks and open space areas that have scenic resources.
- Continue to implement sign and lighting and utility regulations that minimize the effects on views.
- Scenic transportation routes should be identified and adjacent property owners should be encouraged to protect scenic values.